The Builder.

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ILLUSTRATIONS.

The Abbeys of Great Britain.—XXIX. Hexham.—Drawn by Mr. Roland W. Paul ..... *Double-Page Photo-Litho.*
Plan of Hexham Abbey.—Drawn by Mr. Charles C. Hodges ..... *Double-Page Photo-Litho.*
New Building for the Surveyors' Institution.—Messrs. A. Waterhouse & Son, Architects ..... *Double-Page Tone-Block.*
Design for a Stone Bridge—By Mr. G. B. Carvill ..... *Single-Page Ink-Photo.*
Competition Design: Municipal Buildings, Belfast.—Messrs. A. G. Humphry and W. B. Hopkins ..... *Single-Page Ink-Photo.*

Blocks in Text.

Centenary Memorial Window in Wesley's Chapel, City-road ..... Page 317
Hexham Abbey :—
Patera with Inscription on West Side of Rood-screen ..... „ 322
The Crypt ..... „ 323
Canopy in North Aisle of Choir ..... „ 323
Hexham Abbey (continued) : —
The Frith Stool ..... Page 325
Surveyors' Institution New Building : Ground Plan ..... „ 325
Belfast Town Hall : Competition Design : First-Floor Plan ..... „ 326
Illustrations to Student's Column ..... „ 329

CONTENTS.

The Proposed Drainage By-laws for London 313
Notes 314
The Architectural Association Spring Visits 316
The Architectural Association Discussion Section 316
The Wesley Centenary Memorial Window 317
London By-laws as to the Drainage of Buildings 317
Architectural Societies 320
Archæological Societies 320
The London County Council 321
Metropolitan Asylums Board 321
Applications Under the London Building Act, 1894 321
The Building-Trade Dispute 322
Hexham Abbey 322
The Surveyors' Institution New Building 326
Design for a Stone Bridge 326
Competitive Design for the New City Hall at Belfast 326
Books :—M. Benson and J. Gourlay's "Temple of Mut in Asher"; A. Clutton-Brock's "Cathedral Church of York"; A. Dimock's "Cathedral Church of Southwell"; H. J. L. J. Massé's "Cathedral Church of Gloucester"; "Laxton's Builders' Price Book"; "Lockwood's Builders, Architects, Contractors, and Engineers' Price Book" 326
Trade Catalogues 328
Student's Column. Architectural Hygiene—XII. 328
The New Architect of the L.C.C. 330
The New Government Offices 330
The Disposal of House Refuse 330
Obituary 330
General Building News 331
Sanitary and Engineering News 331
Foreign 331
Miscellaneous 331
Capital and Labour 332
Legal 332
The Ancient Light Dispute at Knightsbridge 332
Abbey-mansions 332
Important Claim against Builders Under the Workmen's Compensation Act, 1897 332
Action by Contractors 333
Meetings 333
Recent Patents 333
Some Recent Sales of Property 333

The Proposed Drainage By-laws for London.

FOR some time the Public Health Committee of the London County Council has been engaged in preparing a series of by-laws relating to the construction of drains, soil pipes, waste pipes, &c., which shall apply to the whole county of London. At the present time there are in force certain by-laws of the County Council regarding soil pipes; but, in the main, the drainage regulations of the metropolis are prepared and enforced by the several vestries, the result being a conglomerate of confusing and often contradictory details, the requirements of one vestry differing in many respects from those of all its neighbours. To the architect and builder, as well as to the householder, this confusion is irritating and involves needless waste of time, and any attempt to replace such diverse and divers regulations by a series of by-laws uniformly applicable to the whole of London, cannot fail to be regarded as an attempt in the right direction. There is, moreover, the question of the legality of the "Regulations" made by the vestries, and this will be set at rest by the issue of the Council's proposed by-laws. It should be stated that the by-laws will not apply to the *City* of London.

The proposals now under consideration, and which we print *verbatim* on another page, differ in many respects from those which were put forward by the committee about two years ago. Nearly all the by-laws have been amplified by the inclusion of details which were ignored in the original document, but in some cases the new proposals are less stringent than the old ones. As an example of the amplification just referred to, we may mention the question of subsoil drainage, which now forms the subject of five clauses, but was dismissed in one clause two years ago. As an example of the reduced stringency of the new proposals, the weight of iron soil pipes may be given; 3½-in. pipes being reduced from 65 lbs. to 50 lbs. per 6-ft. length; 4-in. from 73 lbs. to 60 lbs.; 5-in. from 121 lbs. to 80 lbs.; and 6-in. from 142 lbs. to 100 lbs. Further instances of both classes of alterations will be noticed, as we briefly review the proposed by-laws *seriatim*.

Subsoil drainage is first considered. The most important point is that subsoil-drainage is not made compulsory: "A person who shall erect a new building *and* shall cause the subsoil of the site of such building to be drained. . . . shall," &c. As some sites do not need draining, it is, of course, right that subsoil drainage should not be everywhere required, but it is questionable whether the discretionary power should be vested in the building-owner, as appears to be allowed by the by-law. We may be quite sure that the worst kind of jerry-builders will never "cause the subsoil of the site" of the buildings they erect "to be drained," and the by-law should make it clear that the subsoil must be drained, if, in the opinion of the District Surveyor or other specified official, this is a sanitary necessity. The provisions respecting subsoil drainage are not by any means onerous; the pipes must be "suitable earthenware field pipes," disconnected from the sewer by means of a trap and air-shaft with suitable grate. For the sake of clearness a few corrections ought to be made. In the first and fourth clauses it is implied that subsoil drains will always communicate directly with a "sewer"; at any rate, it is clear that the proposed by-law will not apply to subsoil drains which do not so communicate. But in many cases it will be more convenient to connect the subsoil drains with the sewage drains rather than with the sewer, and it will be well, therefore, to add, in the first clause, after "communicating with any sewer," the words, "or sewage drain," and to add the same words in the fourth clause after "such sewer." In the second clause it should be clearly stated on which side of the trap the "ventilating opening" should be placed.

The second by-law deals with the drainage of surface-water, and here again the same discretionary power appears to be vested in the building-owner. Whether it is wise to leave the drainage of "any area, forecourt, or paved or unpaved surface within the curtilage of the building" to the option of the builder or building-owner is certainly open to question. It has been shown over and over again that undrained surfaces (other than grass-plots and gardens) in the immediate vicinity of buildings assist in the spread of disease. A recent Local Government Board inquiry into the causes of typhoid fever at Swinton, near Manchester, elicited the fact that most of the cases occurred in houses of which the yards were unpaved and undrained. The builders of cheap houses will be only too glad to save the few shillings which the drainage of areas and yards would cost, and it is precisely in such houses that lack of drainage will be most disastrous. We think the by-law ought to insist on all areas, forecourts, yards, and paths being properly drained.

In the matter of rainwater pipes, too, no compulsion is intended by the by-law. If any one fixes a rainwater pipe, he must make it discharge over or into a properly-trapped gully, but apparently he can please himself whether he fixes one or not. Eaves-droppings are not so beneficial either to the walls of buildings or to the heads and shoulders of passers-by as to be allowed by the County Council. Eaves-troughs and rainwater pipes ought to be made obligatory, except, perhaps, in the case of the smallest outbuildings and temporary sheds. The second clause of this by-law states that rainwater pipes shall not receive the discharges "from any water-closet, urinal, slop or other sink, or lavatory." As the discharges from baths were included in the same category two years ago and are not mentioned now, we may conclude that bath-wastes may, under the proposed by-laws, be connected with rainwater pipes; but if baths, why not lavatories?

Sewage-drains may be "of glazed stoneware or semi-vitrified ware, or of cast iron, or of other equally suitable material." Cast-iron drain pipes must have the metal not less than $\frac{5}{16}$ in. thick if 3 in. in diameter, and not less than $\frac{3}{8}$ in. thick if 4 in., 5 in., or 6 in. in diameter. Stoneware and other pipes must have the material $\frac{1}{2}$ in. thick if 3 in. in diameter, $\frac{5}{8}$ in. thick if 4 in., 5 in., or 6 in. in diameter, and $\frac{3}{4}$ in. thick if 9 in. in diameter. Cast-iron drains may have either flange joints or socket joints, the diameter and depth of socket being specified for the several sizes of drain. Socket joints must be caulked with lead, and flange joints must be "securely bolted together with some suitable insertion." Stoneware and other pipes must be "jointed with socket joints properly put together with

cement or other equally suitable material," and as the depth and diameter of the sockets are specified, it follows that some of the patented drain pipes, such as those with screwed joints, cannot be used under the new by-laws. There is room for doubt whether such a sweeping regulation is desirable; and as the Committee's intention has clearly been to allow considerable latitude in the by-laws so that new inventions of merit may be adopted, we think that a saving clause ought in this case also to be included. With this exception we do not think that any reasonable objection can be taken to the proposals for regulating the materials and joints of drain pipes.

The question of gradient is dismissed in one word—"suitable." This certainly is not explicit enough for a subject of such great importance, and will probably lead to that diversity of practice in the different districts of London, which it is the aim of these by-laws to prevent. What one surveyor will think "suitable," another may consider totally inadequate; and in order to prevent such an unfortunate contradiction, we think that minimum gradients should be specified, a proviso being inserted that smaller falls will be allowed if satisfactory means of flushing are provided.

All drains, it is said in By-law 4, Clauses 6 and 8, must be laid on a bed of concrete "not less than 6 in. thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain," and then embedded in concrete (the full width of this bed) to at least half the height of the pipe. Drains under buildings must be entirely covered with concrete not less than 6 in. thick, unless they are of cast-iron, when they may be carried above the floor on adequate supports or laid underground on a concrete bed. As the use of cast-iron pipes under buildings allows the omission of the concrete covering, reduces the number of joints to one-third or one-fourth, and ought to permit a slight reduction in the gradient, we do not think it would be much hardship if it were decided that all drains under buildings must be of cast-iron, especially as such drains are more likely to stand the water test, and will keep watertight for a much longer period than stoneware drains. Means of access must be provided at each end of a drain passing under a building. By Clause 7 of the same by-law the water test is made compulsory for all drains, except subsoil drains, "at least 2 ft. head of water" being required. If this clause is adopted by the Council, a great impetus will be given to the use of stoneware pipes with special joints or of iron pipes.

All inlets to drains, except those provided for ventilation, must be trapped, and for this purpose any kind of trap may apparently be used except bell traps, dip traps, and D traps. Grease-traps are not mentioned. In the previous by-laws the intercepting trap, stopping aërial communication between the drain and the sewer, must be "within the curtilage" of the building, but as these words are now omitted, we conclude that the trap may be placed in the street, with the cover in the curb of the footpath, according to the practice of many provincial towns. This is a reasonable innovation. Access to the trap must be provided, but this may be secured either by a manhole "or other separate means of access."

By-law 8 treats of the ventilation of drains, and is interesting because it allows three methods of ventilation instead of the two usually specified. The first has the air inlet near the trap, and an outlet shaft near the head of the drain; the second has the positions of inlet and outlet reversed; and the third, which is the new arrangement, permits two "vertical pipes or shafts" to be used, carried up "to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air." This is a great improvement. But it ought to be clearly stated that there must not be any trap on the line of drain between the two ventilators in any of the three arrangements. Ventilation pipes must be constructed like soil pipes, and must be of the same diameter as the drains with which they are connected, except that, when a 3½-in. soil pipe is used as a ventilator, it will be considered large enough to ventilate a 4-in drain. The air-inlet grates must be "*above and near* the level of the surface of the ground," instead of "at or near" as in the previous by-laws, and must have apertures measuring in the aggregate not less than the sectional area of the drains they are intended to ventilate.

The tenth by-law deals with waste pipes from lavatories and sinks (other than slop-sinks or urinals), and requires the waste pipes to be of "lead, iron, or stoneware"; the last-named material will certainly not be advantageous for long waste pipes. The waste pipes must be trapped close to the fittings, but bell traps, dip traps, and D traps may not be used for the purpose. The pipes must discharge over or into a gully, or over a channel leading to a gully. The traps must be "ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap." The connexion of waste pipes from several fittings is clearly contemplated. It is somewhat curious that the waste pipes from baths are not mentioned—they may presumably be left untrapped; and, as we have already pointed out, the connexion of bath wastes with rainwater pipes appears to be allowed by the third by-law.

The five clauses of By-law 11 are concerned with soil pipes, under which name are included the waste pipes from slop-sinks, urinals, and water-closets. Those from slop-sinks and urinals may be 3 in. in diameter, but those from water-closets must be not less than 3½ in. in diameter, and all must be of *drawn* lead or cast iron. The weights of iron soil pipes have already been given. Lead soil pipes must weigh, per 10 ft. length, not less than 60 lb. if 3 in. in diameter, 70 lb. if 3½ in., 80 lb. if 4 in., 100 lb. if 5 in., and 120 lb. if 6 in. Soil pipes must be fixed outside buildings, "whenever practicable;" internal soil pipes must always be of drawn lead; iron pipes must have either bolted flange-joints or caulked lead socket-joints, but it is not specified that lead pipes must have wiped joints. The wastes from baths, lavatories, and sinks (other than slop-sinks) may not be connected with soil pipes, and it is distinctly laid down that "there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected." In other words, the foot-disconnexion of soil pipes is prohibited, and every soil pipe *must* be used as a drain-ventilator, whether it is in a suitable position or not. This hard-and-fast rule does not strike us as altogether satisfactory, especially as the soil pipes may be within the building. The tops of soil pipes, as of drain-ventilating pipes, may be left open, neither cowls nor wire-guards being required; this simplification is a decided improvement on the existing requirements of the vestries, which vary very considerably. The ventilation of traps connected with soil pipes is regulated in By-law 17, and is only required when a soil pipe receives the discharges from more than one fitting. The ventilation pipes must be of drawn lead or cast iron, not less than 2 in. in diameter and weighing (if lead) at least 15 lb. a yard, and (if iron) at least 25 lb. per 6-ft. length. If the ventilation pipe is carried up inside the building, it must be of lead. As in the case of soil pipes, it might with advantage be ordained that ventilation pipes must, "whenever practicable," be carried up outside the building. The ventilation pipe must be carried up as high as the soil pipe, or connected with the soil pipe above the highest fitting.

By-laws 12 to 16 deal with the connexions between lead and iron pipes, stoneware and lead, lead and stoneware, iron and stoneware, and stoneware and iron; and in each by-law a proviso is inserted that any other connexion than those described may be adopted if it is "equally suitable and efficient." This is a wise and reasonable provision.

The remaining by-laws deal with maintenance, penalties, application to existing buildings, &c., and do not call for particular notice. We have pointed out the main features of the proposals of the Committee, and have made one or two criticisms, but we have no hesitation in saying that on the whole they are a body of practical regulations, which are neither capricious nor unduly onerous. Provision is made in many cases for the adoption of new and improved methods, when these shall have commended themselves to the officials whose duty it will be to enforce the by-laws, and several stringent or unnecessary clauses have been either modified or omitted. The by-laws have not yet received the sanction of the County Council, so that it is not too late for amendments to be considered, either those which we have suggested or others which our readers may like to offer.

At the very earliest it will be some months before the by-laws can possibly come into force, as they will not be considered by the Council until after Easter, and, after being adopted, they must be confirmed at a subsequent meeting. Whether they will ever come into force at all will depend upon the powers to be given to the municipalities contemplated in the London Government Bill, now being considered by the House of Commons. If this becomes law—and, unfortunately, there seems little doubt that it will—the power to regulate drainage and sanitary arrangements may be given to the new municipalities, and the existing state of confusion will be continued, perhaps for generations. Every effort ought to be made to prevent such a retrograde step.

NOTES.

The New A.R.A.

WE may congratulate the Royal Academy on having recognised (rather late in the day) the claims of Mr. Aston Webb for election as an architectural Associate of their body. Mr. Webb is the kind of architect we like to see in the Academy, as he represents the all-

round view of the art of architecture in its completeness; not merely the designing of detail, but the expression of design in plan and construction. There seems to have been a too prevalent idea within the ranks of the Academy, that plan has little or nothing to do with art; whereas it is an essential element in the art of architecture, and ought to be recognised as such in an Academy of Arts.

London Government Bill.

IT is not surprising to find that the London County Council, at its last meeting, passed a number of recommendations embodied in the Report of the Local Government and Taxation Committee on the London Government Bill, in condemnation of various features in that measure. They evidently realised that, as we have already remarked, the London Government Bill, whether intentionally or not, is in reality a measure for whittling away the power of the London County Council. We fear, it is true, that we cannot quite rise to the heights of Mr. Dickinson's panegyric, in declaring that the London County Council "had by its honesty and unselfish work attained a position which would last while London lasted," since we hold that the Council, in pursuing political warfare rather than the honest carrying out of London work, has in a great measure been false to its trust, and in fact shows symptoms of becoming little better than the latter-day Metropolitan Board of Works. But there is always the chance and the hope that it may reform itself; and as long as that is possible, we must always look with apprehension on any project for weakening the central authority in the government of London, and promoting local variation and caprice in municipal legislation; and so far we think the attitude of the London County Council towards the Bill is justifiable.

The Chelsea Water Supply.

EVIDENCE on the London water question is gradually accumulating, and can only be ignored at immense risk. We have recently received a copy of the Report prepared by Dr. Louis C. Parkes and Dr. Samuel Rideal on the water supplied by the Chelsea Waterworks. It is not pleasant reading. Notwithstanding careful filtration through sand, the water supplied to consumers contains, in seven cases out of ten, blood-heat microbes which have in all probability been derived from sewage or polluted surface water, and which the sand-filters have failed to retain. Further evidence is afforded by the sediment deposited on the "candle" of a Berkefeld filter in a house in Cadogan-square, Chelsea; this sediment contained "countless colonies" of microbes, some of which were spore-bearing, and in some respects not unlike the *Bacillus enteriditis sporogenes*, which is now frequently considered to be the cause of summer diarrhœa. The doctors point out that a system of filtration which allows the passage of "the common accompaniments of sewage and animal pollutions" may on occasion allow the passage of virulent disease germs, which may cause widespread sickness and death. They conclude that "considerations of public safety require that reliance should not be placed upon sand-filtration, as at present conducted, as the sole means of defence, when the water to be operated upon is derived from a tainted source." Whether it is wise to continue to use water "from a tainted source" is a question the doctors do not consider, but this is the really vital question which London is called upon to answer, though there does not appear to be any likelihood that it will be satisfactorily answered during the life of this Government.

The Fire Brigades Bill.

THE Fire Brigade Bill, which is due for its second reading on April 12, should be a most useful measure for obtaining a greater efficiency of our Fire Brigades throughout the Kingdom. The Bill has been promoted by the National Fire Brigades Union, and has the support of the British Fire Prevention Committee. Its careful wording is primarily due to Mr. Horace Folker and Mr. C. H. Brown of the Union, and to Mr. Pym, M.P., who is bringing it in. The Bill should have the attention of the architects and surveyors serving under County or Rural Councils, or under provincial municipalities, for there is not the slightest doubt that a better fire service, combined with the building by-laws generally enforced, would do much to reduce the annual fire loss. The intention of the Fire Brigades Act is that inspectors should be attached to the Local Government Board, who will investigate the efficiency of the fire brigades throughout the country, and only certify for their grants or their claim towards public support, if they are really efficient. Centres like London, which has its own Act, would, of course, be out of the sphere of the new measure, but there is many a provincial town of over 100,000 inhabitants to which the Act will apply. As far as the rural districts are concerned, we trust that, with an efficient country Fire Brigade, we shall not be constantly hearing of the fine old manor houses and country seats which are being lost every year, too frequently owing to the absence of suitable appliances and properly-trained men to handle them.

Cottages in Rural Districts.

THE depopulation of the rural districts is a subject which is constantly causing comment. It is likely to continue to be a subject of greater and greater importance until those who own property in rural districts understand that the agricultural labourer will make his way to the towns unless better accommodation is found for him in the country. At a recent meeting of the Cheshire Dairy Farmers' Association a well-known landowner had the good sense to state that the remedy for the depopulation was "more cottages and better cottages." Many of the cottages which are to be found in country villages are in a state which is a disgrace to the age, and in many districts also the number of cottages is too few. This is more particularly the case in the South and East of England, where farming is in a less satisfactory state than in other districts. It is not likely that a young and industrious labourer will be satisfied to walk two or three miles night and morning to and from his work and live in a cottage in a bad state of repair and with insufficient accommodation, when in London he can get conveyed at a cheap rate to and from his work and have a decent home. No doubt the rent in and about London prevents him from obtaining any better net return there for his labour than in the country, but in the one place he has a comparatively comfortable home and in the other he has not.

The Electric Arc.

THE paper on "The Hissing of the Electric Arc," read by Mrs. Ayrton last week to the Institution of Electrical Engineers, is a useful contribution to our knowledge of a somewhat mysterious phenomenon. In an ordinary direct current arc lamp with solid carbons, when we diminish the resistance in series with the lamp the current increases gradually and continuously until the arc begins to hiss, there is then a sudden rise in the current and a sudden drop in the electric pressure across the terminals of the lamp. When the positive carbon of a hissing arc is examined, the crater is seen to have become so large that it has begun to extend up the sides of the carbon. This led Mrs. Ayrton to think that the hissing was caused by the air having direct access to the crater, the oxygen causing the carbon to burn instead of being merely volatilised. In the arc, when burning normally, the crater on the positive carbon is protected from direct contact with the air by carbon vapour. In support of her opinion she pointed out that the light coming from the outer envelope of the "open" electric arc was always bright green, and so also was the light coming from the crater of the hissing arc. In "enclosed" arc lamps this light was absent both from the aureole and the crater. Again, the image of the positive carbon on a screen when the arc is on the point of humming shows circles of light revolving slowly, and when it begins to hum they rotate very rapidly. Mr. Trotter showed some years ago that the humming arc made sometimes as many as 450 revolutions per second. It seems probable that this is caused by draughts getting into the arc. Mrs. Ayrton showed many interesting experiments in support of her views. For example, she showed that blowing oxygen down a hollow positive carbon at once started hissing, although the current was well under the normal hissing current. In experimenting with other gases many curious effects were found, and a new field of inquiry discovered. We wish all success to Mrs. Ayrton's investigations, which are not only of practicai importance to electricians, but are of great scientific interest.

The Action of Water on Zinc and Galvanised Iron.

A PAPER relating to this subject was recently communicated to the Society of Chemical Industry by Mr. H. E. Davies. The results of a number of experiments have led the author to conclude that (1) all kinds of water attack zinc in presence of air; (2) rain-water appears to have the least action; (3) a moderate degree of hardness favours the action, and extreme hardness does not prevent it; (4) allowing the zinc to become coated with deposit by long contact with air-exposed water does not altogether prevent further action; (5) when water containing zinc compounds is drunk, zinc is found in all viscera. Mr. Davies also finds that zinc is more rapidly dissolved by water stored in vessels of galvanised iron than by water in contact with pure zinc. We do not think, however, that much danger to health need be apprehended from the storage of water in clean vessels of galvanised iron, for we know of a case where rain-water collected from a galvanised iron roof and stored in a galvanised iron vessel upon the sides of which

numerous white blotches of zinc compound were visible, was used for a long period for drinking purposes without any apparent effect upon the health of those who consumed it. Nevertheless, tanks of galvanised iron, in common with all other descriptions of water tank, should be kept as free as possible from deposits of any kind.

Tullyallan Castle, Fifeshire.

IT is announced that this interesting building, together with the estate, which extends over 4,125 acres, has been placed in the market. The castle, which is finely situated upon rising ground which overlooks the Forth, is remarkable for the elegance and taste, rather than for the strength and security, of its design, and for the beautiful vaulting, consisting of groined and ribbed arches resting upon a row of central pillars, in the two rooms of the ground floor. Notwithstanding the Early English style of some of the details, Messrs. D. McGibbon and T. Ross* assign the older parts of the castle (which was formerly held by the house of Blackadder) to the fifteenth century, and compare it with Tantallon and Doune, Morton and Rait, as an example of the stage between the keep proper and the castle with quadrangle—the main buildings being extended with towers and wings to form a commodious residence. At Tullyallan the recess and windlass-chamber for the drawbridge remain, whilst the great hall has an outside entrance door, upon the first floor level, which it may be presumed was gained by a removable outside stair, as the staircase, within a projecting octagonal tower, passes between a bedroom on that floor and the adjoining parlour or private hall. Another notable feature at Tullyallan are the moulded corbels, to serve as lamp-brackets, at the side of the moulded jambs and hood of the fireplace in the smaller room on the ground floor. There is a tradition that the castle occupies the site of a stronghold of the Macduffs, Thanes of Fife, wherein Lady Macbeth was killed.

Oriel College, Oxford.

THE University authorities recently agreed to take over Adam de Brome's Chapel from Oriel College, together with a sum of 270*l.*, the estimated cost of repairs which are at once necessary, whilst the college retain a right of access to De Brome's tomb for repairs, and so on. In 1326 Edward II. gave his almoner, Adam de Brome, a licence to build and endow a college in honour of the Virgin, towards which the King had already granted the advowson and parsonage-house of St. Mary's. Seven years later the parsonage-house was converted as St. Mary's Hall, and Edward III. granted the Society a tenement styled L'Oriele, on which the college was re-established, and to which, it is understood, its name is due. The Charity Commissioners have entered into negotiations with Oriel College in respect of the Hospital of St. Bartholomew, Oxford, granted to them by Edward III., and which is now used as farm-buildings. It is alleged that the college authorities, in not maintaining a chaplain for the hospital chapel, and in other directions, fail to fulfil their obligations as regards the hospital, and the almspeople. The total net income is estimated at about 105*l.*, but it is generally admitted that under modern conditions the administration of the charity should be re-modelled.

* "The Castellated and Domestic Architecture of Scotland," vol. i., 1887: from which work we take some particulars.

Society of British Artists.

CERTAIN landscapes and sea-pieces are the relieving points among the general mediocrities of this exhibition. Mr. F. A. W. Armstrong's "Evensong" (63) is a poetic landscape in a peculiar manner which has been started by one or two gifted painters and is imitated by others. Mr. Spenlove's "A Soliloquy of Night" (57) looks as if it may be good, but is so obscured by the glass that no very definite opinion can be formed of it. Mr. Ayerst Ingram's "A Freshening Breeze" (86) is a bright sea-piece. Mr. J. W. Parsons' "Corrievreckan" (116) represents the movement of sea-water but not its surface; Mr. Gouldsmith's "In Mid-Ocean" (502), with the ship's hull sunk behind the lumpy water, is a spirited performance. Among the President's contributions by far the best is the rather small one, "The Monastery of Fiesole" (360); it has not the hard style of the "Interior of Amiens" (90), a large work of little value. The figure pictures are mostly of the most commonplace order; Mr. Mastin's "For a Dream's Sake" (126) is one of the best, and Mr. Borough Johnson's "Eve's First View of Herself" (434) is a pretty nude, both in expression and drawing. Among the landscapes other than those mentioned already, we may notice Mr. Val Davis's "A Fen Village" (12); Mr. Walter Fowler's "An Old Port in East Anglia" (113); Mr. Reginald Smith's "Sheep Pastures by the Sea" (129); Mr. Walter Thompson's "The Stream" (274), a poetic little sketch; and Mr. J. D. Ferguson's "Flower Market, Paris" (437), a clever sketch of the impressionist type.

Mr. McLean's Gallery.

THE exhibition at Mr. McLean's Gallery in the Haymarket does not include any picture of the first interest, unless we rank as such Millais' "Emma Moreland," which however is well known. Among the landscapes is an exceptionally fine example of Mr. Wimperis's work, "The Moorland"; a Highland scene by Mr. Louis B. Hurt, in which the effect of the strong light on a hill-side in the middle distance, through a break in the clouds, is given with remarkable truth and reality; a fine calm scene by Westerbeck, "On the Dunes at Scheveningen"; and a painting by Clays of an English subject (unusual with him), "A Stormy Evening off Gravesend." None of the figure-pictures exhibited are of much interest, save the Millais already referred to.

The Retiring Architect of the L.C.C.

WE may congratulate Mr. Blashill, who this week retired from the office of Architect to the London County Council with the thanks of his late employers, on a very well earned leisure. For a good many years he has carried on with great ability and energy the work of a position requiring special and rather unusual qualifications; and no appointment of the kind could have been better justified by the results. It will not be easy to adequately fill his place.

APPOINTMENT.—The Council of Charing Cross Hospital have appointed Mr. A. Saxon Snell architect in connexion with the proposed rearrangement and extension of the hospital.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

THE TESTING STATION OF THE BRITISH FIRE PREVENTION COMMITTEE.

THE Architectural Association and the Institution of Junior Engineers were invited by the British Fire Prevention Committee to visit their testing station at North Bank, Regent's Park, on Saturday, March 25. About sixty members, the larger proportion being of the Engineers, attended and witnessed the test which took place during the afternoon. Mr. E. O. Sachs, the chairman of the executive, explained the origin and objects of the committee.

The test which was made on Saturday was that of a floor of solid deal baulks, 9 in. thick, exposed to a fierce fire for one hour, following on a smouldering fire of a quarter of an hour. As the rules of the committee do not permit any member or visitor to publish any account of a test carried out, the result cannot here be described. The committee will publish from time to time careful records of all tests, and these will be available for the guidance of those interested in the subject. A vote of thanks was accorded to Mr. Sachs, Mr. Farrow, and the other members of the committee who had received the party.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE eleventh meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 24th ult., Mr. H. J. Leaning, Chairman of the Section, presiding.

Mr. Louis Jacob read a paper dealing with the subject of "Arbitration," and commenced by quoting a definition from the "Encyclopedia Britannica," where arbitration is explained as "an arrangement of taking and abiding by the judgment of a selected person instead of an established Court of Justice." He held, further, that, as far as possible, matters of dispute should be settled without entangling ourselves in the meshes of the law, that lawyers, too, were not so qualified, generally speaking, as architects or surveyors to deal with building disputes because of their lack of technical knowledge, and was in favour of the establishment of a Building Court on the lines of the Admiralty Court, where, before a Judge with professional assessors, matters needing decision could be tried, and awards fairly arrived at, as suggested by Mr. A. A. Hudson in a paper read before the Surveyors' Institution. No architect should be his own arbitrator. Should a contractor foolishly sign such an agreement he must bide by the consequences. All points referred to an arbitrator (or third surveyor under the London Building Act, 1894), should be clearly defined and set forth, and the award, in detail and as explicitly, should settle the said points in dispute. The hearing of evidence was perhaps one of the most difficult things the layman, as arbitrator, had to do, and here against a solicitor or barrister he was seriously handicapped. No award could be set aside unless either misconduct could be proved against the umpire or arbitrator, or that the award had been improperly procured. Should the award not be taken up, the parties were still liable for the umpire's charges, though he would probably have difficulty in obtaining them. Arbitration was perhaps not quite so popular as a few years ago, and things seemed rather to tend towards the special Court, as above referred to

Mr. E. Greenop, opening the discussion, stated that the "legal mind" was necessary for an architect and surveyor to act properly as arbitrator, and that a weak umpire often led to great injustice. The Tribunal of Appeal under the London Building Act was too costly to be of much practical service.

Messrs. Satchell, Matthew Garbutt, George Smith, Hopkins, Strange, and the chairman continued the discussion. Mr. Strange mentioned Professor Kerr's book on "The Consulting Architect" as a good one on this subject, and the chairman said the fact of the arbitrator not being bound to give his reasons for his award was the weak point in arbitrations, no finality being thus arrived at.

The next meeting is fixed for May 5, when a debate conducted by Mr. H. A. Satchell and Mr. R. W. Schultz on the contract system is to be opened.

COME UNTO ME ALL YE WHO LABOUR AND ARE HEAVY LADEN AND I WILL GIVE YOU REST
PRESENTED BY ALD. J. HEPWORTH J.P. ON BEHALF OF THE METHODIST NEW CONNEXION

Centenary Memorial Window in Wesley's Chapel, City-road.

THE WESLEY CENTENARY MEMORIAL WINDOW.

We give herewith a sketch of the window which was unveiled not long ago in connexion with the great meeting held in Wesley's Chapel, City-road, to commemorate Wesley's Centenary. It illustrates the text, "Come unto Me all ye that labour and are heavy laden, and I will give you rest," and was presented by Alderman J. Hepworth, of Leeds, as an offering from the Methodist New Connexion.

The window was carried out by Messrs. Mayer & Co., of Munich, from the design of Mr. F. Mayer.

ELECTRIC LIGHTING EXTENSIONS AT HAMMERSMITH.—At the Hammersmith Electric Lighting Station, Fulham Palace-road, the inauguration has just taken place of the first extension of the generating station and public and private lighting. The company were shown over the new generating station by the consulting engineer, Mr. A. H. Preece, A.M.Inst.C.E. The extensions consist of the following:—A new engine-house, 40 ft. by 27 ft., with rectifier and pump-room adjoining, designed by Mr. Hugh Mair, the Vestry's Surveyor; two engines of 500-horse-power; two alternators of 300 units per hour capacity; a Ferranti main feeder switch-board; a water-tube boiler of 250-horse-power; a 500-horse-power evaporative condenser, and three pumps.

LONDON BY-LAWS AS TO THE DRAINAGE OF BUILDINGS.

THE Public Health Committee of the London County Council reported to the meeting of the Council on the 21st ult. that for some time they had been engaged in the preparation of by-laws under Section 202 of the Metropolis Management Act, 1855, which empowers the Council to make by-laws for regulating "the dimensions, form, and mode of construction, and the keeping, cleansing, and repairing of the pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith." They now submitted to the Council a series of proposed by-laws which have received the approval of the Local Government Board. The Act requires the by-laws to be approved by a Secretary of State, but the Local Government Board, within whose province the subject-matter of the by-laws now more properly comes, have considered them at the request of the Home Secretary. The Committee mentioned that the Metropolis Management Amendment (By-Laws) Bill, which is being promoted at the instance of the Council for the purpose of enabling it to make by-laws requiring the submission of plans of drains and drainage works, contains a clause transferring to the Local Government Board the powers of the Secretary of State in respect of the confirmation of drainage and certain other by-laws. This clause has been inserted by desire of the Local Government Board.

"The drainage by-laws which we now submit," continued the Report, "have been prepared after careful consideration of suggestions made by the London Sanitary Authorities, the Sanitary Institute, the Royal Institute of British Architects, the Association of Municipal and County Engineers, the Society of Engineers, and other bodies. They have been the subject of long correspondence with the Local Government Board, and they are now in the form in which we think they might be made by the Council. At present persons constructing drains have to do so to the satisfaction of the various Vestries and District Boards, and the requirements in different districts vary considerably. We think the adoption by the Council of a series of by-laws which will apply throughout London will be welcomed by the Sanitary Authorities, and will tend to the more uniform administration of the law relating to drains. In drafting the by-laws we have found it absolutely necessary to include provisions dealing with soil pipes and their connexions, and we therefore propose that the existing by-laws on these matters included in those made by the Council under Section 39 of the Public Health (London) Act, 1891, shall be repealed as from the coming into operation of the new by-laws. This will have to be done by a repealing by-law, and the Local Government Board have suggested to us a form for the purpose, which we append to this Report. This repealing by-law will be submitted to the various Sanitary Authorities for their observations two months before it is made by the Council. The by-laws under the Public Health Act do not apply to the City of London, and we have, at the desire of the Local Government Board, inserted a clause in the new drainage by-laws excluding the City from their operation, as the Corporation state that they have special powers as to drains, under the City of London Sewers Act, 1848. It will be necessary that the new drainage by-laws, which require confirmation by a Secretary of State, and the repealing by-law, which requires confirmation by the Local Government Board, shall come into force simultaneously, and the Local Government Board have intimated that they will arrange for the two sanctions to be given at the same time. The Metropolis Management Act, 1855, provides that the drainage by-laws, if made at one meeting, shall have no force and effect until submitted to and confirmed at a subsequent meeting, and we think the Council should now make them, and should confirm them at the expiration of two or three months, when the time allowed under Section 114 of the Public Health (London) Act, 1891, has elapsed. There are certain other requirements as to advertisement, publication, &c., which differ according to whether the by-laws are made under the Metropolis Management Act or under the Public Health Act. We will take care that these requirements are observed. We recommend—(*a*) That the Council do make by-laws under Section 202 of the Metropolis Management Act, 1855, in the terms set out in Appendix I. to this report, and that the seal of the Council be affixed to copies of such by-laws. (*b*) That the Council do, pursuant to Section 114 of the Public Health (London) Act, 1891, send to the London Sanitary Authorities a proposed by-law, in the terms set out in Appendix II. to this Report, for the purpose of repealing certain existing by-laws under that Act, which relate to soil pipes and the ventilation of the traps of water-closets. (*c*) That the Clerk be instructed to advertise notice of the Council's intention to apply for confirmation of the repealing by-law, and to take the other steps prescribed by the Public Health Acts."

Appendix I.—Drainage By-Laws.—The Metropolis Management Act, 1855, Section 202.

By-laws made by the London County Council for regulating the dimensions, form and mode of construction, and the keeping, cleansing, and repairing of the pipes, drains, and other means of communicating with sewers and the traps and apparatus connected therewith.

1. *Drainage of Subsoil.*—A person who shall erect a new building and shall cause the subsoil of the site of such building to be drained by means of a drain communicating with any sewer, shall not construct such subsoil drain in such a manner or in such a position as to communicate directly with such sewer, but shall provide a suitable and efficient trap between such subsoil drain and such sewer.

He shall provide a ventilating opening to such

trap at a point in the line of such subsoil drain as near as may be practicable to such trap, and communicating directly with the open air.

He shall cause such ventilating opening to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through such opening. He shall cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

He shall cause such subsoil drain between such trap and such sewer to be constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

He shall cause such subsoil drain above uuch trap to be formed of suitable earthenware field pipes properly laid to a suitable fall and to discharge into such trap.

2. *Drainage of Surface Water.*—A person who shall erect a new building and shall cause any area, forecourt, or paved or unpaved surface within the curtilage of the building to be drained by means of a drain or drains communicating with any sewer shall cause every inlet to such drain or drains to be constructed as a properly-trapped gully and shall cause such drain or drains to be otherwise constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

3. *Rain-Water Pipes.*—Every person who shall erect a new building, and shall provide, in connexion with such building, a pipe or channel for the purpose of conveying to any sewer any water that may fall on the roof, shall cause such pipe or channel to discharge over a properly-trapped gully or into such gully above the level of the water in the trap thereof.

He shall not cause any such pipe or channel to be so constructed as to receive into such pipe or channel any solid or liquid matter from any water-closet, urinal, slop or other sink, or lavatory.

4. *Materials, &c., for Drains.*—Except in the case of a drain constructed for the drainage of the subsoil of the site of a building, every person who shall erect a new building shall, in the construction of every drain of such building coumunicating with a sewer, use good sound pipes formed of glazed stoneware or semi-vitrified ware, or of cast iron, or of other equally suitable material.

He shall not construct any such drain so as to pass under any building, except in any case where any other mode of construction may be impracticable.

Size of Drain.—He shall cause every such drain to be of adequate size, and, if constructed or adapted to be used for conveying sewage, to have an internal diameter of not less than 4 in.

Drain to be Laid on Concrete.—He shall also cause every such drain, whether or not constructed or adapted to be used for conveying sewage, to be laid on a bed of good concrete not less than 6 in. thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain. He shall also cause such drain to be laid with a suitable fall.

Fall of Drain. Joints of Drain.—If he shall construct such drain of cast-iron jointed with socket joints, he shall cause such joints to be not less than 2½ in. in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of 3-in. and 4-in. pipes, to be not less than ¼ in. in width, and, in the case of 5-in. and 6-in. pipes, to be not less than ⅜ in. in width. If such drain be jointed with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

If he shall construct such drain of stoneware, semi-vitrified ware, or material other than cast-iron, he shall cause such drain to be jointed with socket joints properly put together with cement or other equally suitable material.

Drain to be Water-tight.—He shall cause every such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) to be so constructed as to be water-tight, and to be capable of resisting a pressure of at least 2 ft. head of water.

Concrete to be Filled In.—He shall cause good concrete to be filled in, so that it shall extend to the full width of the concrete bed already prescribed in this by-law, and so that such drain shall be embedded to the extent of not less than half its diameter.

Thickness and Weight of Iron Pipes.—If he shall construct any such drain of cast-iron, the thickness and weight of the pipes in proportion to the diameter thereof shall be as follows :—

Internal Diameter, Inches.	Thickness of Metal, not less than	Weight per 9-ft. length (including socket and beaded spigot or flanges—the socket not to be less than ⅜-in. thick), not less than
3	⅜ of an inch	110 lb.
4	,,	160 ,,
5	,,	190 ,,
6	,,	230 ,,

Thickness, Sockets and Joints of Stoneware Pipes.—If he shall construct any such drain of stoneware, semi-vitrified ware, or material other than cast-iron, the thickness of the pipes, and depths of the sockets, and the annular space for the cement in proportion to the diameter, shall be as follows :—

Internal Diameter, Inches.	Thickness of Pipe not Less than	Depth of Socket not Less than, Inches.	Annular Space for the Cement, not Less than
3	⅜ of an in.	1¾	5/16 of an in.
4	⅜ ,,	1¾	5/16 ,,
5	⅜ ,,	2	5/16 ,,
6	⅜ ,,	2	5/16 ,,
9	¾ ,,	2	7/16 ,,

Drains under Buildings.—Where any such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) passes under a building, he shall cause such part thereof as passes under the building to be laid where practicable in a direct line for the whole distance beneath such building, and to be completely embedded in and covered with good and solid concrete at least 6 in. thick all round.

Provided that in any case where such drain shall be constructed of iron, he shall not be required to cover such drain with concrete, but unless it be carried above ground and also be carried at least at each joint on adequate piers or other sufficient supports, constructed of iron, stone, brick, or cement concrete, it shall be laid on a bed of good concrete in accordance with the requirements of this by-law relating to drains which do not pass under a building.

He shall whenever practicable cause adequate means of access to such drain to be provided at each end of such portion thereof as is beneath such building.

Composition of Concrete.—He shall cause all concrete used in connexion with any such drain, whether under a building or not, to be composed of clean gravel, hard brick broken small, or other suitable ballast, well mixed with clean sand and good Portland cement in the proportion of one part of sand, one part of cement, and five parts of other material, or with clean sand and good blue lias lime in the proportion of one part of sand, one part of lime, and four parts of other material.

Inlets to Drains to be Trapped.—He shall cause every inlet to every such drain, not being an inlet provided in pursuance of the by-law in that behalf as an opening for the ventilation of such drain, to be properly trapped by an efficient trap so constructed as to be capable of maintaining a sufficient water seal. He shall not construct or fix in or in connexion with any such drain, any trap of the kind known as a bell trap, a diptrap, or a D trap.

Protection of Drain Beneath Wall.—He shall, in every case where any such drain is laid beneath a wall, cause such drain to be protected at the part beneath the wall by means of an arch, flagstone, or iron support, which shall not bear on the drain and shall be of sufficient size and strength to prevent any disturbance of, or other injury to, such drain.

Drains to be Trapped from Sewer.—5. Every person who shall erect a new building shall provide in every main drain or other drain of such building which may immediately communicate with any sewer, a suitable and efficient intercepting trap (in order to cut off the drain from the sewer) at a point as distant as may be practicable from such building, and as near as may be practicable to the point at which such drain may be connected with the sewer.

Access to Trap. — He shall, except in cases where the means of access to be provided in compliance with the preceding by-law shall give adequate means of access to such trap, provide a separate manhole or other separate means of access to such trap for the purpose of cleansing it.

6. A person erecting a new building shall cause every means of access provided in compliance with any of the foregoing provisions of these by-laws to be constructed so as to be water-tight up to the level of the adjoining ground surface or roadway, and to be fitted with a suitable manhole cover, and, if placed within a building, to be fitted with an air-tight cover.

7. *No Right-Angled Junctions.*—A person who shall erect a new building shall not construct the several drains of such building communicating with a sewer in such a manner as to form in such drains any right-angled junction, either vertical or horizontal. He shall cause every such branch drain or tributary drain to join another drain obliquely in the direction of the flow of such drain, and as near as practicable to the invert thereof.

8. *Ventilation of Drains.*—Every person who shall erect a new building shall, for the purpose of securing efficient ventilation of the drains of such building communicating with a sewer, comply with the following requirements :—

(i.) He shall provide at least two untrapped openings to the drains, and in the provision of such openings he shall adopt such of the arrangements hereinafter specified as the circumstances of the case may render the more suitable and effectual.

Alternative Arrangements.—(*a*) One opening being above and near the level of the surface of the ground adjoining such opening, shall communicate with the drains by means of a suitable pipe, shaft, or chamber, and shall be situated as near as may be practicable to the trap which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening shall be obtained by carrying up from a point in the drains, as far distant as may be practicable from the point at which the first-mentioned opening shall be situated, a pipe or shaft, vertically, to such a height and in such a position as to afford by means of the open end of such pipe or shaft a safe outlet for foul air.

(*b*) In every case where the foregoing arrangement of the openings to the drains may be impracticable or undesirable, there may be substituted the arrangement hereinafter prescribed.

One opening shall be obtained by carrying up from a point, as near as may be practicable to the trap, which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer, a pipe or shaft, vertically, to such a height and in such a position as to afford, by means of the open end of such pipe, a safe outlet for foul air. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening, being at a point in the drains as far distant as may be practicable from the point at which such last-mentioned pipe or shaft shall be carried up, shall be above and near the level of the surface of the ground adjoining such opening, and shall communicate with the drains by means of a suitable pipe or shaft.

(*c*) If in any case neither of the two preceding arrangements are desirable, then both the first and second openings may be obtained by carrying up from the points referred to in the previous subsection suitable vertical pipes or shafts to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air.

(ii.) *Gratings or Covers to Openings.*—He shall cause every opening provided in accordance with any of the arrangements hereinbefore specified to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through any such opening. He shall, in every case, cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

(iii.) *No Bends or Angles in Pipes.*—He shall not, except where unavoidable, cause any bend or angle to be made in any pipe or shaft used in connexion with any of the arrangements hereinbefore specified.

(iv.) *Size of Pipes.*—He shall cause every pipe or shaft which may be used in connexion with any of the arrangements hereinbefore specified to be of a sectional area not less than that of the drain with which such pipe or shaft may communicate.

(v.) *Construction, Material, and Weight of Pipes.*—He shall cause every pipe or shaft used in connexion with any of the arrangements hereinbefore specified to be constructed in the same manner and of the same material and weight as if such pipe or shaft were a soil pipe.

(vi.) *Use of Soil Pipes as Ventilating Pipes.*—Provided always, that for the purpose of any of the arrangements hereinbefore specified the soil pipe of any water-closet, or the waste pipe of any slop sink constructed or adapted to be used for receiving any solid or liquid excremental filth, in every case where the situation, sectional area, height and mode of construction of such soil pipe or such waste pipe shall be in accordance with the requirements applicable to the pipe or shaft to be carried up from the drains, shall be deemed to provide the necessary opening for ventilation which would otherwise be obtained by means of such last-mentioned pipe or shaft.

Provided also that any such soil pipe or waste pipe shall, where such soil pipe or waste pipe shall have an internal diameter of not less than 3½ in., and shall in all other respects comply with the requirements as to the position, height, and mode of construction of the pipe or shaft to be provided for the ventilation of any drain, be deemed to provide adequate ventilation for any drain having an internal diameter of not more than 4 in.

9. *No Inlets to Drains Within Buildings.*—A person who shall erect a new building shall not construct any drain on such bullding communicating with a sewer in such a manner that there shall be within such building any inlet to such drain, except such inlet as may be necessary from the apparatus of any water-closet, slop-sink, or urinal.

10. *Material of Waste Pipes.—Traps to Waste Pipes.*—A person who shall erect a new building shall cause every pipe in such building for carrying off waste water from every lavatory or sink (not being a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth) to a sewer, to be constructed of lead, iron, or stoneware, and to be trapped immediately beneath such lavatory or sink by an efficient siphon trap,

which shall be constructed of lead, iron, or stoneware, with adequate means for inspection and cleansing, and which shall be ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap.

He shall not construct or fix in or in connexion with such waste pipe, lavatory, or sink, any trap of the kind known as a bell-trap, a dip-trap, or a D-trap.

Waste Pipes to Discharge in the Open Air.—He shall cause every pipe in such building for carrying off waste water to a sewer to be taken through an external wall of such building, and to discharge in the open air over a properly-trapped gully or into such gully above the level of the water in the trap thereof, or over a channel leading to such a gully.

11. *Soil Pipes. Situation and Material.*—Any person who shall provide a soil pipe in connexion with a new building for the purpose of conveying to a sewer any solid or liquid excremental filth, or shall for that purpose construct a soil pipe in connexion with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and shall construct such soil pipe in drawn lead or of heavy cast-iron. Provided that in any case where it shall be necessary to construct such soil pipe within such building, he shall construct such soil pipe in drawn lead, and so as to be easily accessible.

Thickness and Weight.—He shall construct such soil pipe, whether inside or outside the building, so that its weight, if the pipe be of lead, and its thickness and weight, if the pipe be of iron, in proportion to its length and internal diameter, shall be—

Diameter.	Lead. — Weight per 10-ft. length not less than	Iron.	
		Thickness of metal not less than	Weight per 6-ft. length (including socket and beaded spigot or flanges—the socket not to be less than ¼ in. thick) not less than
in.	lbs.	in.	lbs.
3½	70	⅜	50
4	80	⅜	60
5	100	⅜	80
6	120	⅜	100

Joints.—If he shall construct such soil pipe of cast iron with socket joints, he shall cause such joints to be not less than 2½ in. in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of 3½-in. and 4-in. pipes, to be not less than ¼-in. in width, and, in the case of 5-in. and 6-in. pipes, to be not less than ⅜ in. in width. If he shall construct such soil pipe with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

No Connexions with Rain-water and Waste Pipes. No Traps.—He shall construct such soil pipe, whether inside or outside the building, so that it shall not be connected with any rain-water pipe or with the waste of any bath, or of any sink other than that which is provided for the reception of urine or other excremental filth, and he shall construct such soil pipe so that there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected.

Diameter.—He shall cause such soil pipe, whether inside or outside the building, to be circular and to have an internal diameter of not less than 3½ in., and to be continued upwards without diminution of its diameter, and (except where unavoidable) without any bend or angle being formed in such soil-pipe, to such a height and in such a position as to afford by means of the open end of such soil pipe a safe outlet for foul air.

12. *Outlet. Connexion of Lead Soil Pipe, &c., with Iron Drain, &c.*—Any person who shall connect a lead soil pipe, waste pipe, ventilating pipe, or trap with an iron pipe or drain communicating with a sewer, shall insert between such lead soil pipe, waste-pipe, or trap, and such iron pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, waste pipe, or trap with such thimble by means of a wiped or overcast metallic joint, and shall connect such thimble with such iron pipe or drain by means of a joint made with molten lead, properly caulked; provided always that it shall be sufficient if he shall connect the lead soil-pipe, waste pipe, ventilating pipe, or trap with the iron pipe or drain in an equally suitable and efficient manner.

13. *Connexion of Stoneware Trap of Closet, &c., with Lead Soil Pipe, &c.*—Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with a lead soil pipe, waste pipe, or trap communicating with a sewer, shall insert between such stoneware or semi-vitrified ware trap or pipe and such lead soil pipe, waste pipe, or trap a brass socket, and shall insert such stoneware or semi-vitrified ware trap or pipe into such socket, making the joint with Portland cement, and shall connect such socket or appliance with the lead soil pipe by means of a wiped or overcast metallic joint; provided always that it shall be sufficient if he shall connect the stoneware or semi-vitrified ware trap or pipe with the lead soil pipe, waste pipe, or trap in an equally suitable and efficient manner.

14. *Connexion of Lead Soil Pipe, &c., with Stoneware Drain, &c.*—Any person who shall connect a lead soil pipe, waste pipe, ventilating pipe, or trap with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert between such lead soil pipe, waste pipe or trap and such stoneware or semi-vitrified ware pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, waste pipe, or trap with such thimble by means of a wiped or overcast metallic joint, and shall insert the flanged end of such thimble into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the lead soil pipe, waste pipe, ventilating pipe, or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

15. *Connexion of Iron Soil Pipe, &c., with Stoneware Drain, &c.*—Any person who shall connect an iron soil pipe, waste pipe, ventilating pipe, or trap with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert the beaded spigot end of such iron soil pipe, waste pipe, or trap into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the iron soil pipe, waste pipe, ventilating pipe, or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

16. *Connexion of Stoneware Trap of Closet, &c., with Iron Soil Pipe, &c.*—Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with an iron soil pipe, waste pipe, trap, or drain communicating with a sewer, shall insert such stoneware or semi-vitrified ware trap or pipe into a socket on such iron soil pipe, waste pipe, trap, or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the stoneware or semi-vitrified ware trap or pipe with the iron soil pipe, waste pipe, trap, or drain in an equally suitable and efficient manner.

17. *Ventilation of Trap of Water-closet.* — Any person who shall construct any water-closet, the soil pipe of which shall communicate with any sewer and shall be in connexion with any other water-closet, shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil pipe, or into the soil pipe at a point above the highest water-closet connected with such soil pipe, and so that the ventilating pipe shall have in all parts an internal diameter of not less than 2 in., and shall be connected with the arm of the soil pipe or the trap at a point not less than 3 in. and not more than 12 in. from the highest part of the trap and on that side of the water seal which is nearest to the soil pipe. He shall cause the joint between the ventilating pipe and the arm of the soil pipe or the trap to be made in the direction of the flow.

He shall construct such ventilating pipe in drawn lead or of heavy cast iron. Provided that in any case where it shall be necessary to construct such ventilating pipe within a building he shall construct such ventilating pipe in drawn lead.

He shall construct such ventilating pipe, whether inside or outside a building, so that, if the pipe be of lead, its weight shall not be less than 45 lbs. per 12 ft. length, and if the pipe be of iron its thickness shall not be less than $\frac{5}{16}$-in. and its weight not less 25 lbs. per 6 ft. length.

He shall in all cases cause the joints in, and the connexions to, such ventilating pipe to be made in the same manner as if such ventilating pipe were a soil-pipe.

18. *Slop Sinks for Filth and Urinals.*—A person who shall erect a new building, and shall construct in connexion with such building a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth for conveyance to any sewer, shall construct or fix immediately beneath such slop sink or urinal an efficient syphon trap, so constructed as to be capable of maintaining a sufficient water seal between such slop sink or urinal and any drain, soil-pipe or waste pipe in connexion therewith. He shall not construct or fix in or in connexion with such slop, sink, or urinal, any trap of the kind known as a bell trap, a dip trap, or a D trap.

He shall as regards the ventilation of the trap of such slop sink or urinal and the construction of the waste pipe of such slop sink or urinal comply with all the requirements of the preceding by-laws which are applicable to the ventilation of the trap of a water-closet and the construction of a soil-pipe, always provided that the internal diameter of the waste pipe of any such slop sink or urinal shall not be less than 3 in., and where the internal diameter of such waste pipe is 3 in. the weight of such pipe for every 10 ft. of length shall, if such waste pipe be constructed of lead, be not less than 60 lbs., and if such waste pipe be constructed of cast iron the weight of such pipe for every 6 ft. of length shall be not less than 40 lbs.

19. *Maintenance in State of Repair.*—The owner of any building shall as respects such building at all times maintain in a proper state of repair all pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith.

20. *Penalty.*—Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of two pounds, and in the case of a continuing offence to a further penalty of twenty shillings for each day after written notice of the offence given in accordance with Section 202 of the Metropolis Management Act, 1855.

21. *Application of by-laws to Existing Buildings.*—These by-laws shall, so far as practicable, apply to any person who shall construct or reconstruct any pipe or drain or other means of communicating with sewers, or any trap or apparatus connected therewith, so far as he shall effect any such works in any building erected before the confirmation of these by-laws, as if the same were being constructed in a building newly erected.

22. These by-laws shall not extend to the City of London.

Appendix II.—Proposed Repealing By-law.—By-laws made by the London County Council under the Public Health (London) Act, 1891.

By-law under Section 39 (1).—With respect to water-closets and the proper accessories thereof in connection with buildings, whether constructed before or after the passing of this Act.

From and after the date of the confirmation of this by-law, the by-law numbered 4, and so much of the by-law numbered 3 as provides as follows, that is to say—

"If he shall construct any water-closet and shall fit or fix any trap to any existing water-closet or in connexion with a soil pipe, which is itself in connection with any other water-closet, he shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil pipe, or into the soil pipe at a point above the highest water-closet connected with such soil-pipe, and so that such ventilating pipe shall have in all parts an internal diameter of not less than two inches, and shall be connected with the arm of the soil-pipe at a point not less than three and not more than twelve inches from the highest part of the trap and on that side of the water seal which is nearest to the soil-pipe"—

in the series of by-laws with respect to "water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung, and the proper accessories thereof in connexion with buildings, whether constructed before or after the passing of this Act," which was made by the London County Council on June 22, 1893, and confirmed by the Local Government Board on June 28, 1893, shall be repealed.

By-Laws made by the London County Council under the Public Health (London) Act, 1891 and now Proposed to be Repealed.

By-laws under Section 39 (1).—With respect to water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung, and the proper accessories thereof in connexion with buildings, whether constructed before or after the passing of this Act.

* * * *

3. If he shall construct any water-closet, or shall fix or fit any trap to any existing water-closet or in connection with a soil-pipe, which is itself in connection with any other water-closet, he shall cause the trap of every such water-closet to be ventilated into the open air at a point as high as the top of the soil-pipe, or into the soil-pipe at a point above the highest water-closet connected with such soil-pipe, and so that such ventilating pipe shall have in all parts an internal diameter of not less than 2 in., and shall be connected with the arm of the soil-pipe at a point not less than 3 in. and not more than 12 in. from the highest part of the trap and on that side of the water seal which is nearest to the soil-pipe.

4. *Soil Pipes.*—Any person who shall provide a soil-pipe in connexion with a building to be hereafter erected, shall cause such soil pipe to be situated outside such building, and any person who shall provide or construct or refit a soil pipe in connexion with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and in all cases where such soil pipe shall be situated within any building, shall construct such soil-pipe in drawn lead, or of heavy cast iron jointed with molten lead and properly caulked.

He shall construct such soil pipe so that its weight in proportion to its length and internal diameter, shall be as follows:—

Diameter.	Lead. — Weight per 10 ft. length. Not less than	Iron. — Weight per 6 ft. length. Not less than
3½ inches.	65 lbs.	48 lbs.
4 "	74 "	54 "
5 "	92 "	69 "
6 "	110 "	84 "

Every person who shall provide a soil pipe outside or inside a building shall cause such soil-pipe to have an internal diameter of not less than 3½ in., and to be continued upwards without diminution of its diameter, and (except where unavoidable) with-

out any bend or angle being formed in such soil pipe, to such a height and in such a position as to afford by means of the open end of such soil pipe a safe outlet for foul air, and so that such open end shall in all cases be above the highest part of the roof of the building to which the soil pipe is attached, and, where practicable, be not less than 3 ft. above any window within 20 ft. measured in a straight line from the open end of such soil pipe.

He shall furnish the open end of such soil pipe with a wireguard covering, the openings in the meshes of which shall be equal to not less than the area of the open end of the soil pipe.

In all such cases where he shall connect a lead trap or pipe with an iron soil pipe or drain he shall insert between such trap or pipe and such soil-pipe or drain a brass thimble, and he shall connect such lead trap or pipe with such thimble by means of a wiped or overcast joint, and he shall connect such thimble with the iron soil pipe or drain by means of a joint made with molten lead, properly caulked.

In all such cases where he shall connect a stoneware trap or pipe with a lead soil pipe, he shall insert between such stoneware trap or pipe and such soil pipe a brass socket or other similar appliance, and he shall connect such stoneware trap or pipe by inserting it into such socket, making the joint with Portland cement, and he shall connect such socket with the lead soil pipe by means of a wiped or overcast joint.

In all cases where he shall connect a stoneware trap or pipe with an iron soil pipe or drain, he shall insert such stoneware trap or pipe into a socket on such iron soil pipe or drain, making the joint with Portland cement.

He shall so construct such soil pipe that it shall not be directly connected with the waste of any bath, rain-water pipe, or of any sink other than that which is provided for the reception of urine or other excremental filth, and he shall construct such soil pipe so that there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected.

The consideration of the recommendations of the Committee was postponed until after the Easter recess of the Council.

ARCHITECTURAL SOCIETIES.

ABERDEEN SOCIETY OF ARCHITECTS.—The first annual dinner of this Society was held in the Imperial Hotel, Aberdeen, on the 24th ult. Mr. James Souttar, President of the Society, occupied the chair, and Mr. Arthur Clyne, vice-president, was croupier. In the speeches during the evening reference was made to recent accidents during building operations in the city, the jury in an inquiry as to the death of an apprentice-mason, having found that the lad "lost his life by the falling of a gable in Ann-street, Aberdeen," adding that "they consider the design of the building of the gable defective, and that it was weakened by the 'dooking' of the wall too soon." Reference was made to the propriety of duly qualified responsible architects only being employed, and to a proposed conference to discuss the advisability of the Corporation appointing a public inspector of all buildings.

GLASGOW ARCHITECTURAL ASSOCIATION.—At the usual fortnightly meeting of this Association on the 21st ult., in the Rooms, 187, Pitt-street, Mr. Alex. McGibbon, the Chairman, referred to the recent resolution sent to the Aberdeen Town Council regarding Greyfriars Church, mistakenly called St. Nicholas in the letter, and for which he took all blame. It was of course a confusion of names only; there had been no confusion of the buildings.—Mr. Sam Mavor then delivered a lecture on the "Electric Lighting of Interiors." The lecturer pointed out that it does not require a skilled craftsman to lay electric light conductors in the grooves of wood casings, erected by a joiner, nor to screw to their bases manufactured switches and such apparatus. The result is that much wiring work is done by men and lads who are not tradesmen and who are ignorant of the consequences which might arise from their inexperience or carelessness. Many defects are of a kind which cannot be discovered by ordinary tests, after the completion of the work, and it is, therefore, of great importance that wiring work should be inspected during progress. Architects were strongly urged to encourage their clerks of works to qualify as inspectors of electric light wiring, as they only were in a position to give inspection of the nature required. The best arrangement of electric lamps in residences and other buildings was described, and the relative reflecting powers of walls of various colours and the ratio of candle-power to superficial area and cubic contents to be lighted were given. It was pointed out that much money was wasted in the lighting of shop windows by unsuitable arrangements of lamps. Arc lamps were often fitted too low, and passers were dazzled by the glare so that they could not see the goods exhibited. The barbarous practice of interposing unshaded arc lamps between the goods and the observer, is much too frequent in shop windows. Lamps so placed make it impossible for an observer, without a painful effort, to see the objects beyond them. The vendor thus renders an inspection of his wares a disagreeable operation instead of an inviting diversion.—At the close Mr. Mavor was awarded a hearty vote of thanks for his paper.

ARCHÆOLOGICAL SOCIETIES.

SURREY ARCHÆOLOGICAL SOCIETY.—The forty-fourth annual meeting of this Society was held on Saturday, March 18, at the Council-rooms, in the Castle Arch, Guildford, Surrey, this being its first meeting there. Viscount Midleton, President, occupied the chair, and moved the adoption of the report and statement of accounts for the past year. The report stated that, "in accordance with the resolution of the annual meeting held in March, 1898, the Council had entered into a lease with the Mayor and Corporation of Guildford of the two houses adjoining the Castle Arch; and the headquarters of the Society, with the collections at 8, Danes' Inn, London, and elsewhere, were removed there at Midsummer. Although by the terms of the lease the cost of the structural repairs falls upon the Corporation, the Society has incurred a heavy expense by reason of the great alterations necessary in adapting the interior of the premises to its purposes, and the greater part of the special fund raised to meet this and other expenses incident to the removal has had to be devoted to the settlement of the builder's account. Even with this deduction from the fund, which now amounts to 258*l.* 11s., the Council is enabled with the residue to carry out much in the way of purchasing show cases and binding the books in the library, that would otherwise have proved a serious burden on the Society's usual resources. It therefore feels that its thanks are greatly due to all those who have so generously come forward with their contributions to aid in the Society's work. At the same time, in that the above sum still falls short by 40*l.* of the sum originally asked for, viz., 300*l.*, the Council will be glad to receive any further subscriptions that may be forwarded to the fund. The library and museum exhibits have been diligently and carefully arranged, and will shortly be ready for the inspection and use of members. Although, in accordance with the terms of the lease, the Museum must be opened on one afternoon in the week to the free inspection of the public, it is hoped that the charge on the remaining days to non-members of a small fee for admission will add an appreciable source of income to the Society's finances. The annual excursion was held on Thursday, July 28, the meeting-place being Farnham, whence Moor Park, Whitmead, and Waverley Abbey were visited (*vide Builder*, August 13, 1898). The Council takes this opportunity of returning the thanks of the Society to all who assisted in rendering the meeting successful. The part of the Society "Collections" (Vol. xiv., Part 1) for the year 1898 was duly issued to all members not in arrear with their subscriptions. In this part are valuable papers by Mr. J. Lewis André, F.S.A., and Mr. A. Ridley Bax, F.S.A. Mr. M. S. Giuseppi, F.S.A., contributes a transcript of the Parliamentary surveys relating to Southwark, and the "Catalogue of Church Plate" is still being continued by the Rev. T. S. Cooper, M.A., F.S.A. With this part of the "Collections" a circular was issued to members setting forth what has been done on the site of Waverley Abbey during the last summer, and what it is proposed to do in the approaching summer. The Council has already had reason to consider that work of this kind, while being of general interest to archæologists, is likely to make the Society popular in the county. In order that the excavations may be carried on successfully, the Council will have a proposal to lay before the general meeting with regard to the appropriation of a small sum of money from the reserve fund for this purpose. The Council has great satisfaction in drawing attention to the improved state, in a year of exceptional expenditure, of the Society's finances. During the past year it has been enabled to expend the sum of 50*l.* on an addition of 45*l.* 12s. 2d. Two and Three-quarter per Cent. stock to the Society's reserve fund. There is also a considerable decrease from the end of 1897 in the deficit, as shown in the statement of assets and liabilities at the end of last year. To this result an economy in the matter of the annual part of the collections has in some measure contributed; but the saving thus effected cannot, in the opinion of the Council, be again ventured upon without seriously impairing the usefulness of the Society's work. On the other hand, the saving in rent, which is slightly noticeable in the account now submitted, will be still further observed in the accounts for future years, while an addition to the Society's usual sources of revenue is obtained from the rent of the second house in the Castle Arch. But it is to the increase in the number of new members that the Society is mainly indebted for its improved financial position. The Council has to deplore the loss by death of two Vice-Presidents, viz., Sir Henry W. Peek, Bart., and Major Alfred Heales, F.S.A., and of one member of the Council, viz., Mr. J. Fisher Eastwood. In Major Heales the Society has lost one to whom it has been indebted for many important contributions to the collections. One of the very last acts of his life was to forward his valuable set of rubbings of monumental brasses for presentation to the Society's museum at Guildford. Mr. Eastwood, who has been on the Council since 1892, took a great interest in the establishment of the Society's headquarters at Guildford, and the Council feels greatly the loss it has sustained of his active services in connexion with the special committee formed to carry out the details of the removal. By the resignation of Mr. Philip Norman, Treasurer S.A., a second seat on the Council became vacant. The two vacancies have been filled by the elections of Sir Frederick Pollock, Bart., F.S.A., and Lieut.-Col. W. Marsden, M.A. The number of members is 323, viz., annual, 227; life, 95; and honorary, 1. During the year 45 new members have been elected, viz., 37 annual and 8 life. By death the Society has lost 11 members, viz., 7 annual and 4 life. By resignation, 3 members. Total, 14. Gain over loss, 31." Colonel Godwin Austen seconded the adoption of the report and balance-sheet, which was carried unanimously. Sir Cuthbert Peek moved and Dr. Smiles seconded the re-election of the following retiring members of the Council:—Rev. R. M. Blakiston, Lieut.-Col. Thornton, and Messrs. A. R. Bax, A. P. Boyson, George Curling, S. W. Kershaw, F. A. H. Lambert, and H. E. Malden; this was adopted. Viscount Midleton moved and Lord Ashcombe seconded the re-election of the hon. secretaries, Mr. Montague Giuseppi and the Rev. T. S. Cooper, which was also carried, and for which both those gentlemen returned thanks. Messrs. W. F. Potter and Cecil T. Davis were re-elected auditors, with thanks for past services. Lord Ashcombe proposed a special vote of thanks to Mr. Ralph Nevill for his gratuitous services as Honorary Architect in connexion with the necessary alterations to that building. Mr. A. J. Style seconded. Mr. R. Nevill, in reply, said when one began to deal with an ancient building it was not so easy as one might think. We should all like to keep it as it was, but those whose business it was to deal with it knew that was not always possible, and he hoped that in this case they had not done more than they ought to have done. The meeting was then made special to consider a resolution "that the Council be empowered to appropriate a sum of £25 from the reserve fund towards the expenses of the excavations on the site of Waverley Abbey. Viscount Midleton moved this resolution, and said he did not think the whole of the work could be carried out for less than 200*l.*, but they did not propose to do it all at once, it was better to proceed step by step. Mr. Mill Stephenson, in seconding the resolution, said he had had some little experience in excavations, both in regard to mediæval and early remains, and the site at Waverley was one of the most interesting he knew. It was the mother church of the Cistercian order in England, and, as the Rev. Mr. Cooper had said, he had no doubt the whole of the ground plan of the building would be recovered, and he hoped funds would be forthcoming to enable them to finish the excavations within the next couple of years. The motion was carried unanimously. On the motion of Messrs. A. J. Style and F. B. Eastwood a hearty vote of thanks to the President was passed, and this closed the proceedings.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday at the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

Loan.—On the recommendation of the Finance Committee, it was agreed to lend the Poplar District Board 5,588*l.* for paving works.

Spitalfields Market.—The Public Control Committee recommended, and it was agreed to enter into, a provisional agreement with the freeholders for the purchase, subject to Parliamentary power being obtained, of the freehold and market rights of Spitalfields market for the sum of 170,000*l.*, plus 1,250*l.* to include all costs and fees in respect of negotiations, &c.

The Late Superintending Architect. — Mr. Strong, Vice-Chairman of the Council, said he had much pleasure in moving, on the retirement of Mr. Thomas Blashill as Superintending Architect of the Council, "That this Council, upon the retirement of Mr. Blashill, records its appreciation of the services rendered by him to the Council and to London during the twelve years, 1887 to 1899, he has held the office of Superintending Architect of Metropolitan Buildings and of Architect of the Council. That the above resolution be engrossed and be presented to Mr. Blashill."

Mr. Cornwall, who seconded, and several other councillors, spoke in high terms of the services of Mr. Blashill as Superintending Architect. Colonel Ford said he thought it was unfortunate that it had not been thought proper to secure the reappointment of Mr. Blashill.

The motion having been unanimously agreed to,

Mr. Blashill, who had been called in to receive the thanks of the Council, said that it would always be a pleasure to him to remember that the best services of his life had been devoted to the great central authority of London.

Drury-lane Theatre. — The Theatres and Music Halls Committee recommended, and it was agreed to approve of, certain drawings showing a block of new buildings, comprising workrooms in connexion with Drury-lane Theatre.

Stairways, Woolwich Ferry.—On the recommendation of the Bridges Committee it was agreed to sanction an expenditure of 1,400*l.* for erecting new staircases with glass roofs, and the removal of the existing stairs, at Woolwich Ferry, and to accept the tender of Messrs. Walter Macfarlane & Co., amounting to 1,158*l.* 10s.

Fire-Resisting Materials.—The report of the Building Act Committee contained the following paragraph, the recommendation being agreed to :—

By the provisions of the London Building Act, 1894, the Council may from time to time approve as fire-resisting for the purposes of the London Building Act, 1894, any materials which may appear to it to be suitable for the purpose. We have had before us an application that coke breeze concrete may be so approved. The Council's Architect and the Chief Officer of the Fire Brigade have reported favourably upon the material, which in our opinion is one which might properly be approved as fire-resisting when used for filling in between joists of floors. We therefore recommend — (*a*) That the Council do, in pursuance of the powers vested in it by the second schedule of the London Building Act, 1894, approve of the following material as fire-resisting, namely, concrete, composed of properly burned coke breeze, free from dust and organic impurities, and Portland cement, in the following proportions, viz., five parts by measurement of coke breeze to one part by measurement of Portland cement, mixed together with clean water to the satisfaction of the District Surveyor, when such concrete is used for filling in between the joists of floors, and is filled in to the depth of at least 5 in. (*b*) That notice of such approval of the Council be given to the Royal Institute of British Architects, the Surveyor's Institution, the London Chamber of Commerce (incorporated), the Institute of Builders, and to the District Surveyors under the London Building Act, 1894, and be also advertised in the leading daily and professional papers.

The London Government Bill.—Recommendations of a Progressive character of the Local Taxation Committee regarding the London Government Bill were adopted after a long debate. The following remarks on the London Building Act, 1894, occurred in the report :—"The proposals contained in the Bill with respect to transferring some undefined and unagreed parts of the administration of the London Building Act, 1894, to the Borough Councils are, in our opinion, open to considerable criticism. This Act was settled definitely only four years ago after a long and elaborate inquiry in Parliament. The proposal now is to reopen the whole question as to the authorities that are to deal with the respective portions of the Act, and leave the settlement of this to the Privy Council, who may deal with it in one order or in successive orders as they think fit. Thus the law relating to buildings in the Metropolis will be still more complicated than it is at present, and that uniformity and independence in the method of execution, which it is essential should be observed over the whole of the Metropolis, will be destroyed."

Tramways.—A report of the Highways Committee for proposing increases in the wages of tramway servants and giving them one day's rest in seven was adopted.

Having transacted other business the Council adjourned for the Easter recess at 2 a.m. on Wednesday morning, having sat continuously eleven hours.

METROPOLITAN ASYLUMS BOARD.

SIR EDWIN H. GALSWORTHY, the Chairman, presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylum District, held at the County Hall, Spring Gardens.

Darenth Asylum and Schools.—It appeared that there had been further diphtheria cases at Darenth, the number of patients now numbering eighteen, and including one of the medical officers. The Darenth Committee recommended that they should be authorised to obtain tenders by advertisement for the fixing of sanitary appliances and the execution of alterations in the drainage system as specified in the bills of quantities prepared by the foreman of works. The cost was estimated at about 2,200*l.* Mr. Cochran moved an amendment to refer the report back, and this was seconded by Mr. W. M. Acworth, who said it was an unheard-of thing for a Committee to prepare specifications, and to carry out works to the value of over 2,000*l.* under the superintendence of a foreman. Obviously new suggestions would be made during the progress of the work, and was a casual majority of the Committee to alter the specifications? The managers were about to appoint an engineer, and he hoped this work would be deferred until they could have the advice of that officer. —Mr. Bruce said this was not a question of main sewers, but of a series of simple alterations to the drains of the buildings. The cost was large simply because the same operations had to be repeated many times over. There was not the slightest necessity for extravagant expert advice. — Captain Andrew thought if 2,000*l.* was to be spent plans should be properly drawn and the work carried out under the supervision of a professional man. Mr. Helby, on behalf of the Committee, said when they proposed to employ Mr. Harston as architect for the painting of the asylum, the managers referred the matter back. In this case there was less necessity for an architect. The internal soil pipes needed to be made joint-proof, and certain simple alterations were required in the lavatory basins. It was the number of operations that ran up the cost. Within the next twelve months about 15,000*l.* would have to be spent on improving the condition of this institution.

The amendment was then rejected, and the Committee's proposal was carried.

The Southern Hospital.—The Works Committee submitted preliminary plans for the projected Southern Hospital, and the architect's descriptive report, which they recommended should be sent to the Local Government Board for approval prior to the elaboration of finished drawings. The foundations of the blocks would differ owing to the nature of the ground, and the Committee considered it impossible to invite schemes for the heating arrangements and engineering works, and useless to work out the foundations, until they were in possession of the views of the Local Government Board as to the general suitability of the designs. The completed drawings and estimates would be submitted to the managers with as little delay as possible. Mr. J. H. Brass said this was a most expensive set of plans. He hoped the managers would inquire into the cost per bed before sending the plans to the Local Government Board. Mr. J. T. Helby: This is a design selected in competition, and we have already given instructions as to the accommodation to be provided. The plans must carry out the orders of the Local Government Board as to air space and so on. Practically, these are sketch plans, and it might be convenient if they remained a short time on view. The Chairman: They have been on view a considerable time. Mr. A. C. Scovell (Chairman of the Works Committee) said the Committee were as well aware as Mr. Brass of the extremely costly nature of this hospital. They could quite foresee that the cost would be a very large sum indeed, and he had a very strong feeling about the great expenditure, but the Committee had done their best to cut it down, and he did not see how they were to save the cost of a single brick.

The plans were then adopted, and a resolution was carried authorising the Committee to omit from the plans the thirty "separation rooms" provided in the original scheme. The Committee held that the working requirements of the hospital would not justify the increased cost entailed.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Formation of Streets—Manor Park Estate.

Lewisham.—The construction, in connexion with the formation of new streets on the Manor Park estate, Lee and Lewisham, of the proposed bridges intended to carry public roads over the river Quaggy (Mr. A. W. Osborn for Messrs. Johnson & Aldridge).—Refused.

Lines of Frontage.

Hampstead.—Projecting porches and bay-windows to seven pairs of semi-detached houses on the south side of Lymington-road, West End-lane, Hampstead (Messrs. Boehmer & Gibbs for Messrs. Boddy & Chapman).—Consent.

Width of Way.

Southwark, West.—Dwellings for persons of the working class on the west side of Lancaster-street, Borough-road, Southwark, within the prescribed distance from the centre of the street, to a height exceeding the distance from the front wall of such dwellings to the opposite side of the street (Messrs. Joseph, Son, & Smithem).—Consent.

Line of Frontage and Width of Way.

Poplar.—A church on the south side of Yabsley-street, Poplar, to abut upon Raleana-road (Messrs. J. & S. F. Clarkson for the Rev. A. Chandler).—Consent.

Means of Escape from Top of High Buildings.

Holborn.—That Mr. G. D. Martin be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the sixth floor of a building on the south side of New Oxford-street, Holborn, at the corner of Bloomsbury-street, on the site of Bedford Chapel (for Mr. A. J. Sanderson).—Agreed.

Marylebone, West.—That Mr. T. Holloway be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fourth, fifth, and sixth floors of the Hotel Great Central, Marylebone-road, St. Marylebone (for Colonel Edis).—Agreed.

Space at Rear.

Peckham.—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of additions to No. 352, St. James's-road, Old Kent-road, Peckham, without an open space at the rear (Mr. J. Warne, for the committee of the North Camberwell Progressive Club).—Refused.

Marylebone, West.—A modification of the provisions of Section 41 of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the proposed erection of No. 8, Northumberland-street, Marylebone, at the corner of Paddington-street, to partly abut at the rear upon a disused burial ground in Paddington-street (Mr.

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Beresford Pite, for Messrs. Matthews Brothers).—Refused.

Working-class Dwellings.

Hammersmith.—That the Council do make an order as follows:—Whereas Mr. H. M. Newlyn, of 40, Old Broad-street, London, on March 15, 1899, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the trustees of Christ Church, Westminster Bridge-road, at the County Hall, a block plan of six blocks of intended dwelling-houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on land at the rear of Nos. 217 and 219, King-street West, Hammersmith, with entrances from that street and Hampshire-hog-lane, ...; now the Council, in the exercise of its powers under Section 42 of the said Act . . . . does by this order sanction the said eighth-scale plan, dated December 4, 1897, and the block plan, dated March 15, 1899 . . . .—Agreed.

Cubical Extent.

Westminster.—The erection at the Stag Brewery, Brewer-street, Pimlico, of two ale-stores, each to exceed in extent 250,000 but not 450,000 cubic ft., and to be used only for the purposes of the trade of a brewer (Mr. J. G. Ensor for Messrs. Watney, Combe, Reid & Co., Limited).—Consent.

Buildings for the Supply of Electricity.

Southwark, West.—That the Council do approve of the plan submitted with the application of Mr. F. Bailey on behalf of the City of London Electric Lighting Company, Limited, for the construction of a furnace chimney-shaft at the Company's station on the east side of Love-lane, Bankside, Southwark, and that the Council do also authorise the erection of such chimney-shaft.—Agreed.

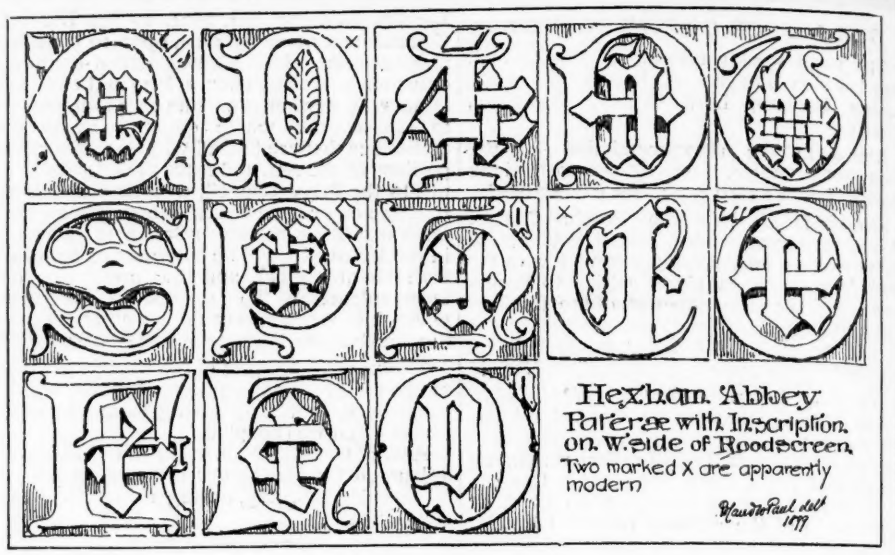
THE BUILDING TRADE DISPUTE.

ON Monday the lock-out of union plasterers entered upon its fourth week, and at present there is no prospect of the dispute being speedily terminated. The Union officials have again intimated to the National Association of Master Builders that they are willing to agree to a conference, but the employers are not inclined to adopt such a course unless the Union give an undertaking that they will discontiue the objectionable practices of which the Masters' Association complain. On Saturday about 2,000 men each received the usual strike pay of 15s. per week, this sum being supplemented for the first time by about 12s. per man, as a result of the special levy made upon those members of the society remaining at work. In many of the affected districts, we understand, the local branches of the Operative Plasterers' Association have addressed a circular to architects and owners of buildings stating that they are prepared to find competent men to finish the plastering of any structure where the employers have locked-out their members.

The movement of the locked-out plasterers in Leeds to establish a Co-operative Plasterers' Society has, it is stated, been successful. The whole of the necessary capital has been subscribed. The men have already secured a large contract, upon which they will commence working after the Easter holidays. Many buildings in the city are at a standstill owing to the plasterers being stopped. On Monday, Mr. M. Deller, the general secretary of the Plasterers' Union, issued a circular addressed to the trade unionists of the United Kingdom appealing for financial assistance to help them to carry on the struggle with the Master Builders' Association.

HARLEY HOUSE, MARYLEBONE-ROAD.—We understand that the site of this house and grounds, in which is a rookery, is about to be taken for the erection of residential flats. The house, which formed the residence of the King of Oude when he visited England many years ago, has been occupied for some while past by a convent (Marie Réparatrice) of nuns, for whom a chapel was built in the garden. The convent will migrate to Priory Lodge, Hampstead, which represents the cottage at Frognal that Dr. Johnson rented for his wife, and where it is said he wrote, in 1748, "The Vanity of Human Wishes."

CAMBRIDGE UNIVERSITY.—The Financial Board have recommended the adoption of electric light for the Senate House, and that the installation shall be carried out after the designs and specifications of Mr. T. G. Jackson, R.A., at an estimated cost of 400*l.*, exclusively of the architect's commission. The Antiquarian Committee report in favour of the erection, upon the site acquired from Downing College, of a new museum of general and local archæology and of ethnology, and the Museums and Lecture-rooms Syndicate advise that, in their opinion, immediate steps should be taken to provide new buildings for purposes of the department of botany.



Illustrations.

HEXHAM ABBEY.

THE sombre and somewhat heavy-looking mass of the remaining portions of Hexham Abbey Church forms the most conspicuous object in the skyline of the picturesque old market town to which it has served as a nucleus and an appropriate centre. It overlooks the small old-fashioned market-place; its eastern side facing the houses and streets, while to the west it is practically open to the country, and borders on grassy slopes, trees, and running streams.

The situation is one with considerable natural advantages, and there is abundant evidence of continuous occupation from pre-historic times. There is, however, no conclusive evidence of a Roman settlement, and it is clear that the worked stones of Roman date in the building were brought from Corstopitum or Colchester, now Corbridge, three miles to the east of Hexham.

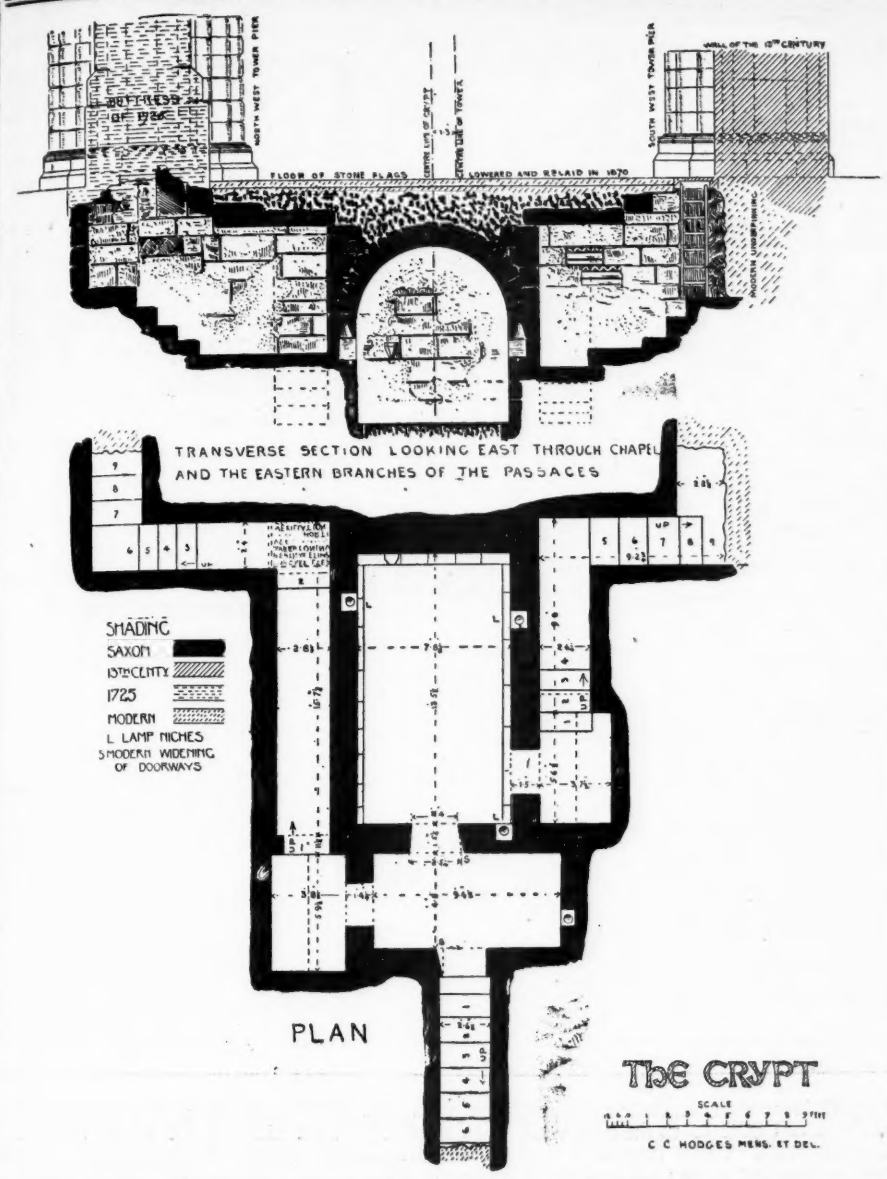
The ecclesiastical establishment owes its origin to the pious intentions of Etheldrida, the wife of Ecgfrid, King of Northumbria (670-685), who about the year 674 gave to St. Wilfrid a considerable estate, which had been her marriage dowry, to enable him to found a church at Hexham. This territory formed what was afterwards the Regality of Hexham, and was a peculiar of the Archbishops of York, who were at once the patrons and visitors of the priory, and lords of the regality in a civil sense.

This is not the place to describe at any length St. Wilfrid's troubled life, which began with his inducing the queen to leave her husband and to follow a religious life. The story has been often told, and need only be alluded to here when it has any direct bearing on the church and its change of state. Etheldrida died in 679, and her death was the immediate cause of Wilfrid's temporary banishment from his favourite monastery of Hexham. During his absence the church was, in 681, raised to the dignity of a bishop's see, and so remained until 821, when, no doubt owing to the Scandinavian inroads, it was allowed to lapse, and was subsequently represented by Lindisfarne and then Durham. The church maintained its monastic character until its overthrow under Halfdene the Dane in 875. It remained in a ruinous condition, and was practically abandoned by its priest, who dwelt with the Congregation of St. Cuthbert, at Durham, until 1083, when William of St. Carileph, Bishop of Durham, ejected the secular and married clergy, and introduced Benedictine monks into his church. This led to Hexham being again occupied and repaired, and served by its priest, Eilaf. Political causes transferred Hexham to the possession and control of the Archbishops of York at this time, and in 1113 Thomas II. established a priory of Austin Canons there, who made joint use of Wilfrid's church and buildings with Eilaf until his death in 1138. Like other northern houses, the priory throve and prospered during the period of peace between England and Scotland, which terminated in the reign of Edward I., and subsequently it suffered serious inroads from the Scots, until in 1346 the defeat at Neville's Cross broke their power for a long period. The most destructive of these raids was that of the year 1296, when the church and monastic buildings, then in progress and nearing completion, were burned and defaced. A long period of extreme poverty ensuing caused the church and other buildings to remain incomplete at the date of the Dissolution in 1536. Since then the remaining portions of the church have served as the parish church of the town, as they clearly did before the Dissolution, and the surviving parts of the conventual buildings have been occupied as the residence of the lord of the manor of Hexham. The estates have passed, either by purchase or marriage, through the families of Carnaby, Forster, Fenwick, Blackett, and Beaumont, and are now in the possession of Mr. Wentworth Blackett Beaumont.

Any description of Hexham Abbey must of necessity begin with the church built by St. Wilfrid. This seems to have been begun about the year 674, and was more or less complete in its main structure and furnishing by 679. Our knowledge of it is almost entirely derived from the written descriptions of those who knew it, in a more or less perfect state. Richard, the third prior, who died about 1175, is its latest describer. He says: "It was begun by making crypts and subterranean oratories, which had passages with many branches beneath the floor. The church above was built with stones squared and of various sizes, and supported by well polished columns. It had three distinct stories or levels, which were carried out to an immense height and length. He also decorated the walls and the capitals of the columns by which they were supported, and the arch of the sanctuary, with figures and statues, and carvings in relief on the stones, as well as pictures and paintings in wonderful variety and great beauty. The body of the church was surrounded with aisles and porches on every side, which with surprising and inexplicable skill communicated with each other by means of winding stairs in stone towers. In these tower stairs and above them were different ways leading to long galleries formed in the walls, with many turnings and branches, some leading up and some leading down, so artfully contrived that a great multitude of men might be there surrounding the whole church and yet not be seen by those on the floor below. Both above and below were oratories as private as they were beautiful. In the porticoes were altars. . . . The atrium of the temple he also surrounded by a wall of great thickness and strength, and, moreover, an aqueduct in a stone channel ran through the midst of the town for the use of the offices."

The same writer goes on to say that this church was one of the grandest in all the north of Europe, and that considerable ruins and foundations were to be seen about it in his day.

Nothing of this remarkable church now remains above ground, but from time to time carved stones, which must have been in its walls, have been dug up on the site or found in the walls of the later buildings about it. These consist of portions of the slabs with carving in relief, and decorated string courses with small baluster shafts arranged in rows and used as ornaments. Similar string courses are to be seen at Jarrow, and still *in situ* in the case of



the western porch of St. Peter's, Monkwearmouth.

The crypt of Wilfrid's church is, fortunately, complete, and is a most interesting underground oratory, which has a parallel at Ripon.* It was formed to serve several purposes. First, as a means of exhibiting, in a suitably mysterious manner, the relics of saints and martyrs brought by Wilfrid from Rome; secondly, as a place of refuge and resort, where religious rites could be carried on in times of danger, and also, perhaps, as a place of sepulture for those held in special veneration. Its plan and arrangements are shown in the accompanying illustrations. The larger chamber contained an altar, and a bracket for a crucifix still remains. It was lighted by means of three lamp niches, and has a full centred barrel vault. Here the relics would be exhibited and mass said. The two side passages have each small vestibules, rather wider than the passages, to obviate crowding at these places. The passage in the south side, which has a doorway opening directly into the oratory, was for the use of the priests. The other two passages were for the people to descend and ascend by, they viewing the religious rites from the antechapel, the door between which and the oratory is splayed for that purpose, while the other doorways have square jambs. The material of which this crypt is formed is squared stones of Roman workmanship and evidently brought from Colchester (Corbridge). The size and grandeur of the church beyond its contemporaries, which so impressed its describers, is to be accounted for in a practical manner by the enormous amount of ready-dressed ashlar which the builders found ready to their hands only three miles from the site. There are two Roman inscriptions still in the crypt, and an inscribed altar was removed from it in the last century and is now lost. A finely carved monumental slab 9 ft. high was found in a foundation which still remains to some length, and is shown on the plan. It appears to have formed the western wall of the monastic buildings on the east side of the cloister of the time of Wilfrid. At Durham a wall in exactly the same relative position is the earliest part of the conventual buildings there.* There is much yet to be learned about St. Wilfrid's church; very little can be conjectured as to its actual plan, and an attempted plan of a portion of it which has been published is entirely apocryphal. It is clear that the greater part of its foundations remain under the floor of the existing church, and from time to time the writer has seen considerable portions of them. It is to be hoped that an opportunity may arise for a more systematic examination than has hitherto occurred. In the church are preserved many stones of this date, the most interesting being a part of one of the carved wall slabs already mentioned. There are many portions of sculptured crosses and grave-covers of pre-Conquest date, including a complete and very singular hog-backed stone. The remaining portions of the famous Cross of Acca, Bishop of Hexham, who died in 740, which was one of the largest, as it certainly was the most beautiful, of all the productions of that school of Anglian stone-carvers which seems to have made Hexham their centre, is now set up in the Cathedral Library, Durham, where also may be seen parts of the curious baluster string courses and two of Wilfrid's water pipes.

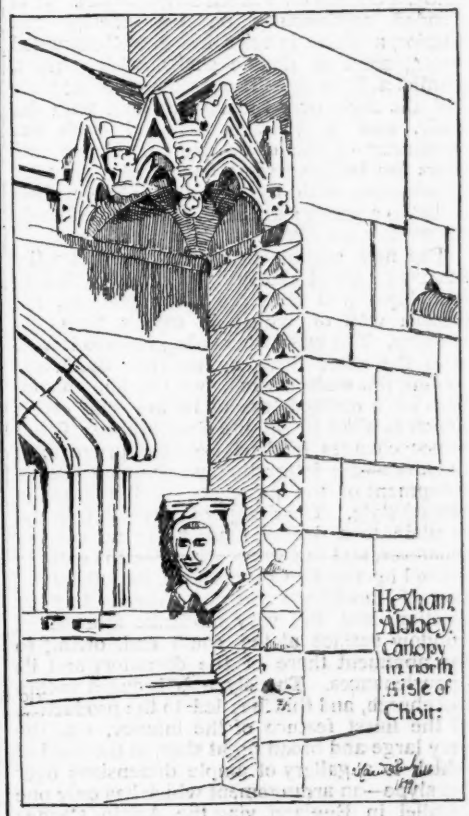
In a general way it may be concluded that the later church stands on the same ground as did its predecessor, and this accounts for the very abnormal proportions of the different limbs of the cross. The site available was too nearly of square form to admit of the long nave which was such a distinctive feature of the plans laid down in the twelfth century.† We have documentary as well as visual evidence of the restricted nature of the site on the east, and the small dimensions of the nave point to a similar difficulty on the west side. It is highly probable that the extent of the remains of the nave represent the dimensions of the body of Wilfrid's church, and it is on this site that the fragments of ornamental details from its walls have been found; the unfinished walls of the later nave are also entirely composed of stones which have done duty three times—in the Roman buildings, in the Saxon church, and in their present position, and contrast strongly, in dressing and colour, with the material in the later church, which was quarried at the time of its building, and is all derived from the beds of coarse sandstone on the south side of the Tyne.

The very substantial character of the early church led to its survival to a much later date than was usually the case, and the Austin canons do not seem to have been in any great hurry to replace it. Their poverty in the early days of the priory may have had something to do with this, and led to the remarkable fact that the Norman period is entirely unrepresented in Hexham. The new church was not begun until the transition from Norman to Gothic was in full progress, and the pointed arch in use, both for arches of construction and decoration alike, and the last traces of the modified chevron ornaments had died away.

The plan of laying down a large cruciform church, a cloister, and a complete series of conventual buildings, was adopted here as in other places, but the work was dealt with in sections and proceeded slowly, for something approaching a century and a quarter had passed away since the new church had been begun when the disastrous raid of 1296 found it incomplete and stopped all further progress.

The first work done was to build the aisle walls of the choir outside St. Wilfrid's choir, which from internal evidence seems to have extended to the second bay east of the crossing. These aisles are of distinctly Transitional character, and severely plain and heavy in their design. The window arches are without hoods inside, but have nook shafts both inside and out. The internal capitals are carved with volute scrolls at the angles, which are a distinct mark of date. The north aisle wall was made 1 ft. thicker than the south, probably for defensive reasons.

The main arcades of six bays on either side followed, and necessitated the removal of the eastern part of the earlier church before they could be finished; they were probably worked from east to west and then from west to east, as the junction occurs at the second pair of piers from the tower. The triforium and clearstory and the vaulting of the aisles followed, and were not finished until the Early English

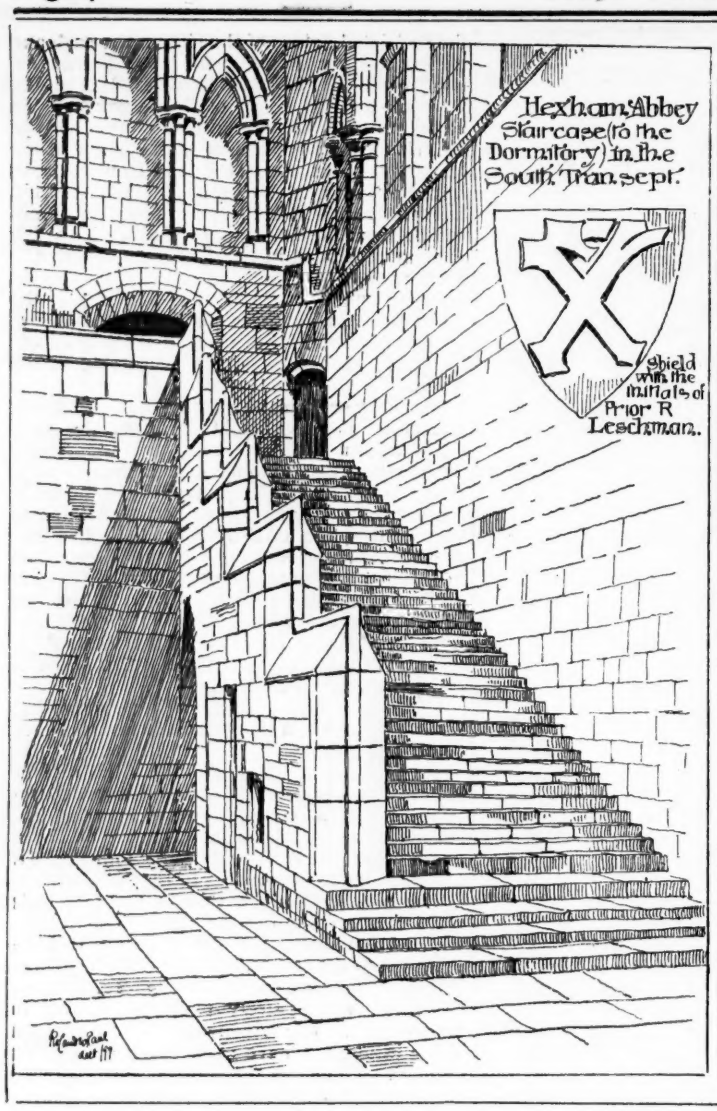


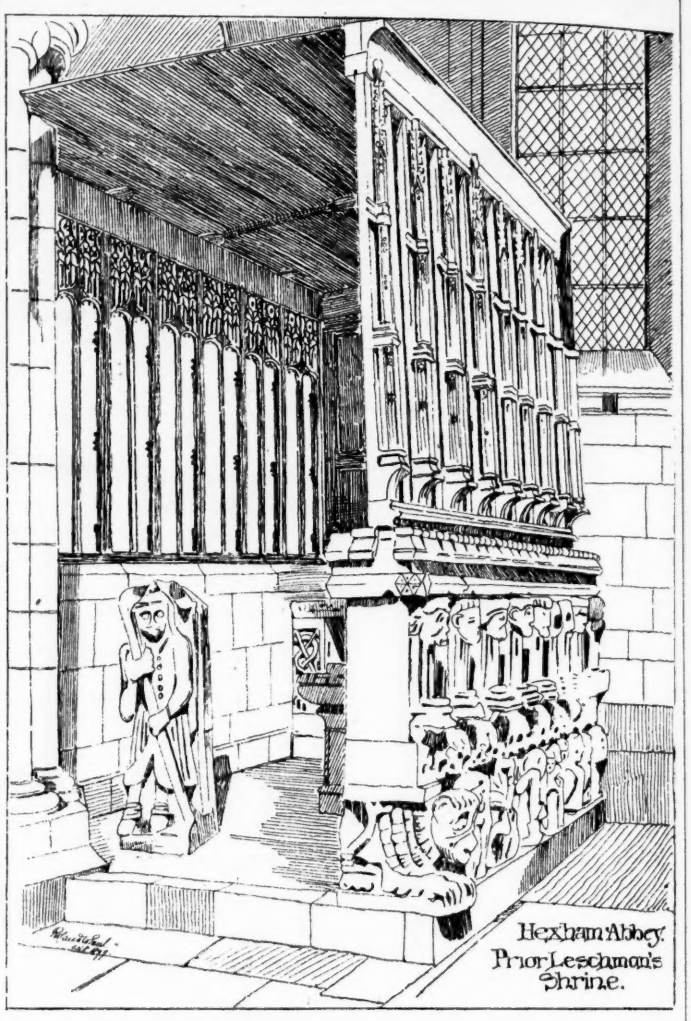
style was fully developed. The work is well designed rich in mouldings, and full of detail

* *Builder*, February 4, 1893.

* Greenwell's "Guide to Durham Cathedral," 5th ed., p. 17.

† *E.g.*, plan of Byland Abbey, *Builder*, October 3, 1896; a typical example of a perfect twelfth-century church plan.





though the execution is coarse when compared with contemporary work in Yorkshire and further south. The architect was clearly working on both sides of the border, as there can be no doubt that the designs of Jedburgh and Pluscardyn, at least, and probably Arbroath, were emanations from the same brain. The triforium has bold semicircular arches containing a pair of pointed sub-arches and pierced spandrils. The clearstory is well developed and unusually lofty (it is 10 ft. higher than that of the nave of Selby, a church on a much larger scale). It is arcaded continuously on the exterior and interior, and the interior has a well-managed arrangement of double shafts, which has a parallel at Romsey. The eastern crossing piers and the arch over them were built with the choir, and a junction effected with the remainder of the early church. For a few years the building must have had a singular appearance, with its extended Gothic choir added to a partly ruinous and dilapidated Early Romanesque church.

The next section seems to have been the eastern range of claustral buildings, including the slype, and then the south transept, the eastern wall of which is earlier than the western. The western crossing piers followed, with the other three arches over them, and joining the eastern arch, but the fine mouldings were omitted, except in the soffit order, which is alike in all the four arches. Other minor changes of detail—as, for instance, in the abaci—are interesting, as showing the development of the principles of the growing Gothic style. The design of the south transept is plain to a degree, there being no carving whatever, and the impressive effect is entirely gained by the fine proportions, the subordination of mouldings and other details to their position, and the very moderate amount of window surface at the south end, owing to the abutment there of the dormitory and its appurtenances. The slype is brought within the church, and this has led to the production of the finest feature of the interior, viz., the very large and broad night stair, at the head of which is a gallery of ample dimensions over the slype—an arrangement which has only one parallel in England, viz., the Austin Canons Church at Oxford, now the Cathedral; but Hexham is by far the finer example. The transepts have aisles on their eastern side only, but there are galleries in the west walls at two separate levels. These terminate now at the western crossing piers; but had the intended nave been erected, they would have been continued round the whole church.

After another pause the north transept was added. Its architecture is a later and a richer specimen of Early English. Though much more ornate than the south wing, its effect is not nearly so pleasing, and there is a certain coarseness and want of proportion apparent. The wall arcade is introduced for the first time in the church, and is well designed, but executed in a rather blundering manner. In the aisle the arcade was returned partly across the aisle to divide it into three chapels, an arrangement which may be seen still remaining in the transepts at Lincoln, and clearly indicated in the Nine Altars at Fountains.

As in the case of the south transept, the east side was built first as high as the clearstory, then the north end, then the west side, till a junction was made with the other work at the west side of the crossing. There are indications of a pause before the clearstory was added, and also of a curious change in the original intention, made during the progress of the work at the north end. This comprised an alteration in the position of the newel stair, from the north-east to the north-west angle, and the raising of the gallery, which crosses the north end, to a higher level than was at first intended. This is shown by a built-up doorway, between the clearstory and triforium levels, in the well of the newel stair at the north-east angle. Enough details are left belonging to the earlier intention to show what it was.

The great length of the transept is the most distinctive feature of Hexham Abbey, being out of all proportion with the scale of the church. The internal dimensions east to west is 225 ft. 4 in., while that from north to south is 156 ft. 4½ in. Each transept is four bays in length, if the slype in the south transept is counted as a bay. Taken together, the choir and transepts are a valuable text-book of the Early English style. The design is a powerful one, full of boldness and originality. Its most marked feature is the excessive stilting of the window arches internally to the lancets at the north and south ends and on the west side of the north transept; a peculiarity which belongs more to the northern than to the southern side of the border. The vaulting is confined to the aisles, and is all quadripartite with well-moulded ribs. A vault over the main spans does not appear to have been contemplated, though the triple vaulting shafts are made a prominent feature in the design, both between the bays and between the lancets at the north end.

The tower was built soon after the completion of the north transept. It is low and broad, and though it has had a later parapet added, it does not appear to have ever been intended to rise more than a single stage above the ridges of the roof. Each face is pierced by two belfry windows, each divided into two by a plain mullion, bifurcated in the head, and with well-moulded joints and arches. A blind arcade of three members completes the fenestration of the sides. The angles are embraced by broad flat buttresses, which die out beneath a corbel table carrying the parapet. The height is 102 ft. from the ground to the stumps of the intended angle pinnacles. It has been suggested that the towers of the churches in these wild regions were kept low to render them inconspicuous as landmarks, and so escape attack from pirates and border raiders. The Austin Canons and Benedictines had no rule against high towers and rings of bells as the Cistercians had.

The Chapter House, if ever completed, has entirely perished, and the only indications of its design are the remains of wall ribs against its north and west walls. These show that it was a lofty apartment, vaulted in a single span, with a quadripartite vault. The side walls were divided by buttresses into three bays, and lighted by lancet windows. Some of its foundations were traced a few years ago. The vestibule which intervened between the Chapter House and the cloister is in a much better state of preservation, as it was used as a slaughter-house for more than a century. Its height is equal to that of the slype, and it was vaulted in nine compartments, with moulded ribs springing from circular columns, and, on the walls, from triple vaulting corbels. It was arcaded all round, and had the usual triple openings on the east and west sides. Those

on the east are still nearly perfect, but the western doorway, which was one of the richest pieces of work in the abbey, fell out during a thunderstorm about 1820. It is thus described in the diary of a lady who knew it :—"A hand at the top seemed to hold vine, fruit, and foliage, descending both sides of the arch, and terminating with two lizards at the bottom." Not a stone of this fine work has been preserved to us. The arcade is carried across the side openings, both on the east and west sides, in a curious manner by placing detached shafts at the centre of the opening on both sides, as indicated on the plan. The shafts are gone, but the bases remain, and show what the design was.

The calefactory was a long room to the south of the vestibule, and was vaulted in two spans with chamfered ribs. Over these two apartments was the dormitory, with a high-pitched roof, the weathering of which could be seen on the south transept wall as late as 1878, when the facing fell away. The night door to the dormitory remains, built up at the head of the night stair.

The other buildings erected before 1296 were the frater, the lavatory, and the cellarium. The frater was a large hall about 100 ft. in length and 28 ft. wide. From the foundations uncovered some years ago, and the details found, it may be described as having had large windows with rich geometrical tracery, and an open roof, the principals carried on stone shafts with richly carved capitals. The pulpit seems to have been made a distinct feature of the interior and richly ornamented. The frater stood on an undercroft, the floor of which is on the ground level, so a flight of steps led to the frater doorway. This doorway was placed close to the south-west angle, and its western jamb remains. On the return or west wall is the beautiful lavatory arcade—one of the finest in England, and perhaps the richest example of the wall type of lavatory. Its basins were to be seen, in a shattered condition, in 1795, and had good carving under the lips of the bowls. The lavatory suffered damage, but fortunately escaped destruction, when the Abbey-house was burned in 1818.

The cellarium is complete and occupies the ground story of the western range. It is a lofty and well-built structure with a barrel vault with moulded and chamfered ribs. All above has been modernised more than once, but in 1795 it retained much of its original character and showed much added work of the time of Prior Leschman (1480-1491).

The continuation of the work would naturally have been the rebuilding of Wilfrid's nave which was standing in 1296, had not the Scots raid placed a period to further progress. The impoverishment of the convent was so great during the fourteenth century that little was done except repairs. One effort was made, however, to extend the church to the east, and to compensate in some measure for the lack of a nave. This consisted in the erection of a range of chantry chapels across the east front, but at a low level and only of slight building. The date of this work is fixed by a deed of Archbishop Zouche given May 28, 1350, which permits the prior and convent to enclose 5 ft. in width of land from the market-place so as to make their procession round the church. This points to the extension having been or being about to be made. This building added greatly to the value of the church, and its variety of style gave the east end that complication of form and detail which is one of the charms of our larger mediæval erections. It opened to the choir by means of five arches, three to the centre alley and one at the end of either aisle. These arches were all well moulded, and had raking crocketted canopies, carved corbels, and dividing shafts. There were seven traceried windows and two moulded doorways, one at either end. This building fell into disrepair, and was used as a lumber-room in the last century. It was then floored at half-height, and the upper floor used as a school, and in 1858, when the ill-advised restoration of the church was in hand, it was entirely removed, all trace of it being destroyed as far as the site goes. Complete drawings of it remain, as well as photographs, and a good part of its window tracery is in neighbouring gardens. It is shown on the plan as being of greater interest than the existing east wall, which, though a piece of good masonry, is manifestly a bald copy of the east end of Whitby Abbey, and of no architectural importance.

The fifteenth century wrought some changes in the church, and saw a determined effort made towards building the nave. The remains of Wilfrid's church were removed, and the stones in the walls used for the new work, which comprised an arcade of six bays and an aisle on the north side, a solid wall on the south, with a range of large windows over the cloister roof on the south, with a large arched recess in the wall for the carrells, and a west front with a central doorway and a great window above it. A newel stair was arranged behind the western respond of the arcade, and no doubt intended to terminate in a turret above the level of the roof. How far this work proceeded cannot now be known. A good deal more remained in 1795 than is to be seen to-day. Carter's sketch gives the jambs of the south windows. These are now all gone. The work was languishing in 1429, as we learn from a significant clause in the will of Roger Thornton, of Newcastle, who died in that year. "It'm I wylle yat cccc marc, whilk yat ye priour and Couent Hexham awe me bee dispendet upon bygging of yeir Kyrk, if yei wol make greable seurtez yat it shal soo be deuly doon." "Yeir Kyrk," means their church, and church in mediæval parlance means nave. The work was, therefore, in progress in 1429, and as the east wall shows that the roof was never put on, it may be concluded it was abandoned from want of means, and the Dissolution came before a final effort could be made to complete it.

About the same time, and almost up to the time of the dissolution, much work was done in the choir in reroofing it and the transept, inserting a large east window of heavy "Perpendicular" character to replace the old lancets, and supplying rich furniture and paintings.

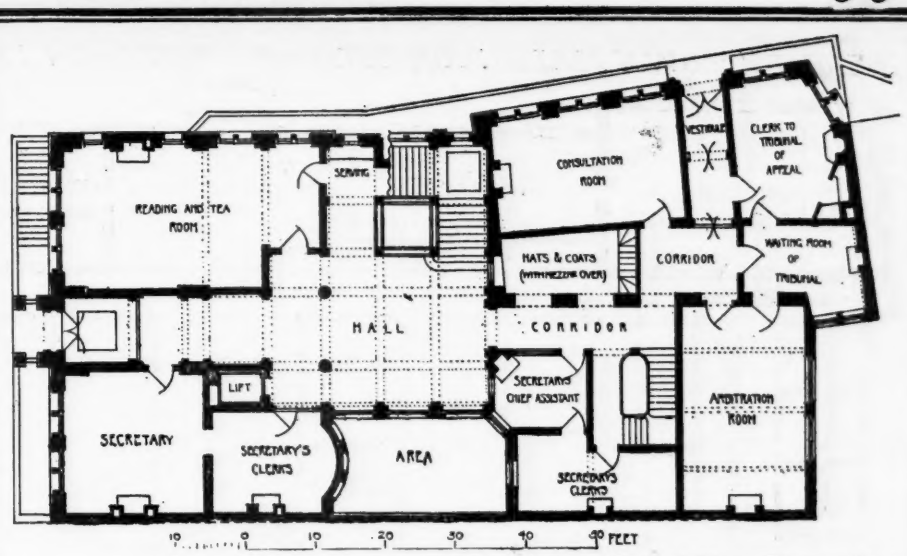
Two small chantry chapels remained as late as 1860. One belonging to the Ogle family stood on the south side, and had a tester at the east end over the altar with heraldic painting, a painted reredos, and traceried side screens. Prior Leschman's chantry was on the north side, and remains in great part though removed to the south transept. The fine ranges of stalls were also of this date, and had canopies and carved misereres. The rood screen is a grand work of Prior Thomas Smithson's time (1491-1524). It still retains a large number of painted panels.

The monuments are not numerous, but there are five good effigies; one ecclesiastic, two knights in mail, a lady, and a civilian. There is a good altar tomb *in situ*, built up between the west end of the north choir aisle and the aisle of the north transept. The table of this tomb is a fine slab of limestone, incised with a most beautiful design of a cross formed of a vine with leaves and fruit.

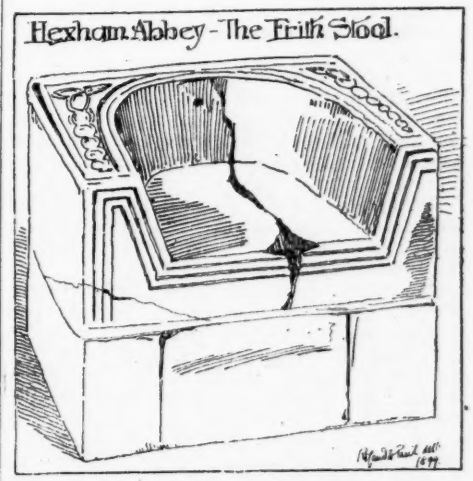
The history of the church during the last two centuries has been a succession of repairs and damages. The first of these on a large scale seems to have been carried out under Sir Walter Blackett, between 1725 and 1739. In the earlier year, the crypt was discovered, owing to the foundation being dug for the great buttress to support the tower. At the same time, the old east window was replaced by one of bastard Gothic character, the canopies of the stalls cut away and galleries erected over them, and the east end of the choir "beautified" by the setting up of a reredos of Grecian design, to mask the arches opening to the eastern chapels. In 1810-11 the roofs were stripped, the lead sold, and Westmoreland slates substituted. In 1830 great alterations took place and much damage was done. The east window of 1729 was blown in and replaced by one of even worse design than its predecessor. Photographs of this "restoration" are extant. The final blow fell in 1858-60, when what took place is only too well known, and one cannot forget to mourn over the "cartloads of beautiful carved woodwork which were taken out of the church and variously disposed of." The only voice raised in protest was the *Builder* of the day, and the issue of October 27, 1860, contains these memorable words: "The absence of proper historic and archæological feeling in the working committee is apparent from the fact, among others, that no competent person has been placed locally in charge of the restoration. The absence of supervision has enabled the contractors to use considerable license. On the day we visited the church they were forming a large warm-air drain 6 ft. wide and 6 ft. deep, and 120 ft. long, through the length of the north transept; that is to say, making a cutting through layers upon layers of coffins and skeletons, the burials of generations, the fragments of which were being wheeled out openly into the churchyard; and to form a cover for this drain the contractors were using up fragments of Norman coffin lids and zig-zag ornaments, and entire gravestones of more modern date, because the sexton thought the churchyard was too full of them, and he wanted them out of his way. Many sculptured stones were lying about the churchyard, of a very interesting description from their early character and comprehensiveness, of which it would be a great pity to lose sight."

The abbey gateway remains in its lower story and is of good Transitional work. The vault remained complete, and the wall dividing the inner and outer halls with its larger and smaller arches, until after 1814, when they were removed to make the ruin "more picturesque."

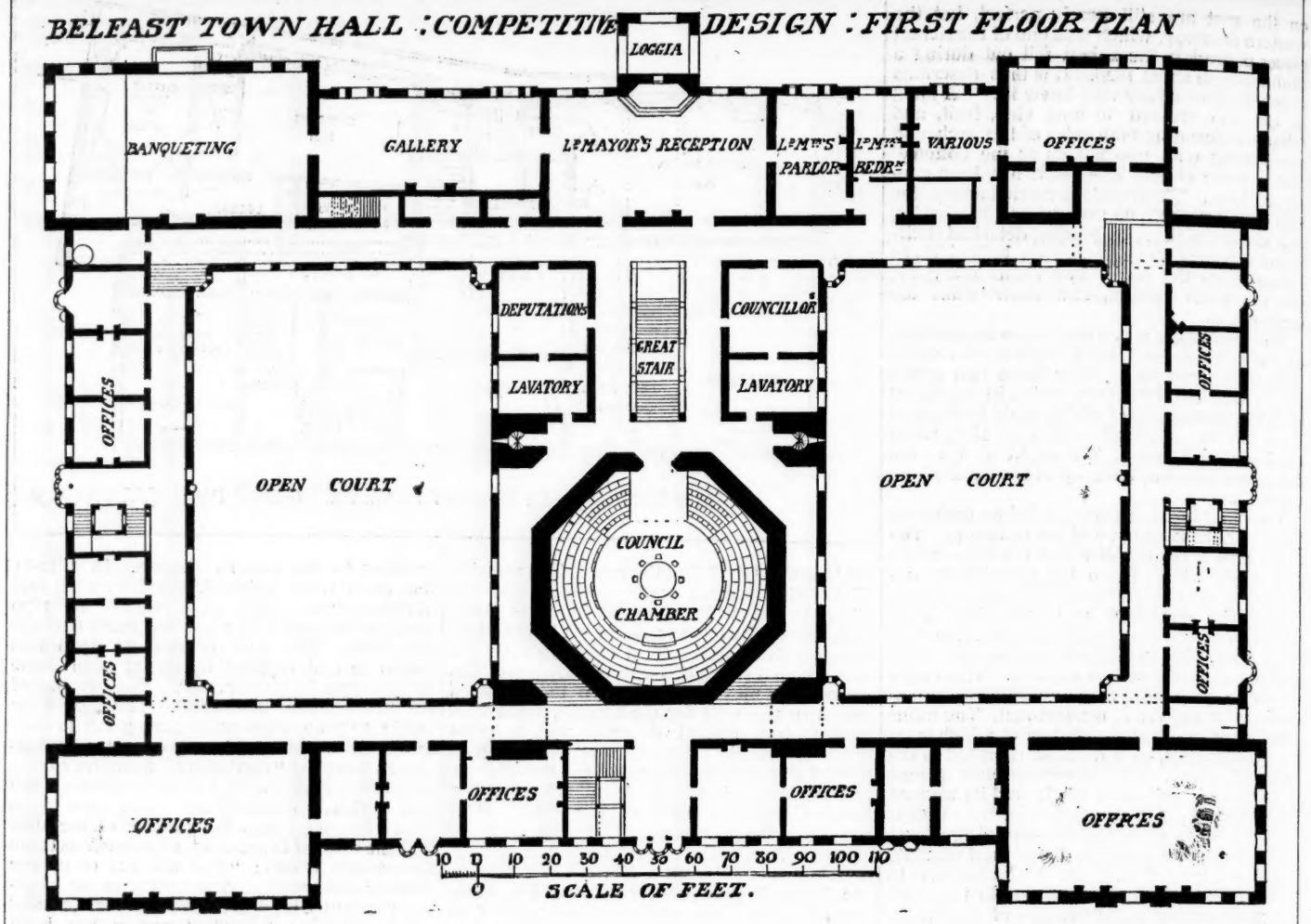
CHARLES C. HODGES.



New Building for the Surveyors' Institution. Ground Plan. [*See next page.*



*** The series of the "Abbeys of Great Britain" is continued this month with illustrations of Hexham Abbey. For the list of Abbeys which have already appeared, and for particulars for future arrangements, see p. xviii.



THE SURVEYORS' INSTITUTION BUILDINGS.

WE give a perspective view and plan of this building, which has recently been completed in Great George-street, Westminster, from the designs of Mr. A. Waterhouse, R.A.

The architect has had to provide accommodation not only for the Institution, but also rooms for the Tribunal of Appeal, and a museum for the forestry collection, of which the Institution is gradually making a special feature.

The ground floor, which has a large hall and a marble staircase, contains on the left of the entrance a reading and tea room, and on the right the secretary's office. The other rooms of the secretarial department occupy a position further back, and the remainder of the floor is taken up by a consultation room, an arbitration room, and other apartments for the Tribunal of Appeal.

On the first floor the most important features are the great meeting-room, which will provide seating accommodation for nearly 200 persons, with corridors in Little George-street, a large room for the council and for arbitrations, and the library, which occupies the whole of the frontage to Great George-street, thereby securing a good light; it is capable of housing a collection of books numbering 20,000.

The forestry museum occupies the second floor, passing through the third or top floor, on the level of which a gallery runs round the apartment, which has an open timbered roof. The third floor contains caretaker's and store-rooms.

The principal materials used on the exterior are Ancaster stone and Ruabon brick, as best calculated to resist the deteriorating effects of the London atmosphere.

The general contractors for the building were Messrs. Foster & Dicksee, of Rugby. The heating has been carried out by Mr. J. Jeffreys; the electric lighting by Messrs. Belshaw & Co.; the fibrous plaster ceilings by Mr. J. M. Bockbinder; the constructional ironwork by Messrs. Handyside & Co., of Derby; the ornamental ironwork by Messrs. Hart, Son, Peard, & Co.; the mosaic floors by Mr. L. Oppenheimer; the lifts by Messrs. Waygood & Co.; the sanitary fittings by Mr. Geo. Jennings; the lead lights by Messrs. W. James & Co.; the grates and chimney-pieces by Messrs. Shuffrey & Co.; the parquet flooring by Mr. Ebner; the decorating by Messrs. Campbell, Smith, & Co., and the wall tiling by Messrs. Craven, Dunmill, & Co.

DESIGN FOR A STONE BRIDGE: THE APPROACH.

THIS design was submitted in competition for the "Tite" prize in 1897.

As the set conditions required the embankment for foot passengers only, a special feature has been made of the approach from the embankment to the bridge, and the illustration shows that part of the design with the water stairs in connexion.

The design is by Mr. G. B. Carvill, and was exhibited at the Royal Academy of 1897.

COMPETITIVE DESIGN FOR THE NEW CITY HALL AT BELFAST.

THE design shown here was one of those sent in in the preliminary competition. The building was planned with two floors generally, and a third floor on the two shorter sides.

The entrance hall is shown on the ground floor under, and the same size as, the Lord Mayor's reception-room, and from it the great stair leads up to the Council chamber. This room was to consist of an octagon 60 ft. in diameter and 90 ft. from the floor to the vault crown, lit by two ranges of four great windows in each. The arrangement and idea of the room was suggested by that of a cathedral chapter-house, and the dome, rising to a height of 190 ft. above the ground, was intended to emphasise the centre from which the municipal life radiates.

The city functions were to be provided for in a fine suite of rooms occupying the greater part of the main front of the building on the first floor. The remainder of the building was to be occupied by the various municipal offices.

The materials of the building were to be red brick and white stone dressings; the corner blocks to be roofed with green slate; the dome to be of iron framing covered with copper. The rest of the roofs to be flat, constructed in iron and concrete covered with asphalt.

The interior of the Council chamber was intended to have oak stalls, tapestry hangings, mosaic or painting on pendentives under a gallery midway of the height, then ashlar stone work up to the vault; the upper windows stained, the lower ones clear glass. The banqueting and reception rooms were to have panelling and plaster ceilings; the great stair and entrance hall to be decorated with marble on walls and floor.

The whole design is kept simple, and effect has been sought in the general dignity of the mass of the building and by means of enriched features sparingly introduced; and the general aim of the designers, Messrs. A. G. Humphry and W. Bonner Hopkins, was to avoid what was either commonplace or pretentious.

The estimated cost was 148,441*l.*, the whole contents being 2,835,620 cubic feet.

The perspective drawing was exhibited at the Royal Academy of 1897.

Books.

"*The Temple of Mut in Asher.*" By MARGARET BENSON and JANET GOURLAY. (London: Murray. 1899.)

THIS book puts on record the results of three short seasons' excavation made by the two writers—the first-named being a daughter of the late Archbishop—among the very ruinous remains of a considerable temple in the plain of Thebes. It is modestly explained and insisted upon that the work was entirely amateur, and was undertaken as a gentle pastime in a favourite winter resort with little hope of any important finds; in performance, however, it has certainly proved distinctly creditable. Much advice and help was obtained from professional archæologists who happened to be at Thebes from time to time, among others, from Professor Petrie himself, and not a few discoveries of great interest were made. The new inscriptions are edited by Mr. Percy Newberry, who, during a residence at Thebes of several years, has made large collections of tracings and copies of the scenes and writings in the ancient tombs.

Mut was the consort of Amen, god of Thebes, the great national god of Egypt under the Theban kings of the XVIIIth to XXVth dynasties. The chief temple at Karnak, celebrated for its vast and imposing hall of columns and for its obelisks, was dedicated to Amen; south of it lay the temple dedicated to Mut, the whole of which might easily be contained in the hypostyle hall of the temple of Amen; not

far off, but at a much later date, was built a temple to the third member of the Theban triad, the moon-god Khonsu, son of Amen and of Mut. Early in the century the English explorer, Burton, made a plan of the surface ruins of the Temple of Mut, which has remained in MS. in the British Museum, where also there is preserved another old plan of the same by Hay. Both plans are valuable as showing *in situ* columns and walls soon afterwards converted into building materials and lime by the orders of Muhammed Ali. Not much can be said for the plan of the building by the "celebrated" Mariette, which these ladies have had the cruelty to reproduce along with their new one by Mr. E. F. Benson, thus inviting for it a comparison with facts which French archæological work is seldom qualified to bear. Architectural students must always beware of trusting the plans of Mariette, unless, perhaps, where the whole of a ruin has remained uncovered after excavation. A few years ago the temple site was marked only by lioness-headed statues standing out of the *débris*, and by the lake (for old ceremonial use in connexion with temple feasts) which still enclosed the ruins on three sides. Many of the black basalt statues of the lion-goddess had been removed to European museums early in the century. Their inscriptions show that they were dedicated by various kings throughout the Theban dynasties to a goddess Sekhemt (often represented with feline head), of whom Mut seems to have been the Theban form. The name of the temple and its surroundings was Asheru ; this explains the title of the book now before us.

In Part II. we have the history of the excavation during the three short successive seasons which it occupied. Parts III. and IV. deal with Egyptian religion and history, in order to explain and illustrate for readers unversed in Egyptology the history of the temple and the principal monuments found there. The ruins yielded fragments of an unusual number of votive statues, including a crouching figure of Senmut, the great minister of Queen Hatshepsut, and architect of Dêr el Bahri, and a striking portrait (plate xxiv.) of Mentuemhat, Governor of Thebes under King Taharqa in the evil days of Assyrian invasion. This portion of the book is particularly well and thoughtfully written, and contains many ingenious remarks, though the views expressed and the conclusions arrived at might not always bear the test of a fuller acquaintance with original sources. In Part V. are printed copies of the inscriptions on the statues, with some translations and comments. The introductory chapter explains the circumstances of the undertaking, and a very full index adds to the utility of the volume.

The plentiful illustrations from photographs and the new plan of the ruins are of extreme interest. From among the remains of many statues the head of a woman (plate vi.) is of an unusual type and very pleasing ; that of an old man (pl. vii.) is extraordinary in its impress of personality, and it is tantalising that there should be no means of identifying the original. It is otherwise with the portrait of Mentuemhat. This will be classed as one of the most remarkable portraits discovered in Egypt, and enough of the inscription remains to identify the head as that of the Governor of Thebes, who must have exercised almost regal power throughout the country at the time of the first Assyrian invasion. The inscription on another statue — unfortunately headless — of the same personage is also of interest. The portrait statue of Senmut (plate xii.) is conventional and disappointing. Bakenkhonsu, the architect of the Ramesseum and of the building of Rameses II. in the Temple of Karnak, certainly lived during the reigns of Sety I. and Rameses II. ; here, however, we have his statue (plate xviii.) inscribed upon the wrists with the cartouches of Rameses III. Hence it may be calculated that he lived at least a century, unless, indeed, this inscription be a mere case of *post mortem* approval, which seems possible. Many familiar names of kings and officials recur ; in fact, in its rich yield of statues, this excavation has brought to light several authentic portraits of celebrities whose faces were before unknown to us.

The bearing of the inscriptions has, in most cases, been well rendered by Mr. Newberry, to whom the great names of the Theban necropolis are, perhaps, better known at present than to any one else. The very remarkable blocks (pls. xx.-xxii.) representing laden ships of the Ethiopian king, Piankhy, are so fragmentary and isolated that it is difficult to decide as to their purport. Some of the ships are laden with good things, apparently from Upper Egypt or Ethiopia, including dom-palm nuts called *kuk* (a name, by the way, which has evidently been transferred to cocoa-nuts). Comprised in other cargoes are gold, oxen, pigeons, fine stones, reeds, &c. Perhaps they were presents to the temple of spoil from the north, brought on galleys from Sais, the chief city of the Delta, from Heracleopolis, Hermopolis, &c., and in the galley of Amen, which had probably sailed with the king on his expedition to crush an invader from the Delta. Galleys of the king, which may have come to meet the conqueror from his native Ethiopia, are also represented, and all bring presents dedicated, in all likelihood, after Piankhy's triumphant return to Thebes from the overthrow of Tefnekht. This powerful prince, issuing from the western Delta, had united the whole of Lower Egypt in an attempt to recover Upper Egypt from the Ethiopians. On the block representing "The Great Ship of Sais" (pl. xx.), the inscription mentions as owner a "ruler of Heracleopolis," whom Mr. Newberry identifies with Tefnekht the invader. But it is impossible that the two should be identical, for the Tefnekht of the new inscription is Samtaui-Taifnekht, and his family probably held the lordship of Heracleopolis for many generations, while Tefnekht, the leader of the attack, only laid seige to that city.

The plan of the temple shows, as usual, a patchwork of many periods, beginning with the reign of Hatshepsut (*c.* B.C. 1500), and continuing to receive additions and alterations down to the destruction of Thebes by Ptolemy X. But a shrine had probably existed there from very remote times, though no remains have as yet been found older than fragments of statuary of the XIIth dynasty (*c.* B.C. 2500). Of architectural remains there seems nothing of importance.

The excavation may have been amateurish, but it was at all events better than the open plundering by Arabs and dealers which has always been permitted where scientific excavation is almost prohibited by an embarrassed government. The two ladies, astonished by their own success, have done their best dutifully to render a true and useful account of their work, for which Egyptologists and all interested in the monuments of Egypt cannot but be grateful to them.

The Cathedral Church of York : a Description of its Fabric and a brief History of the Archi-Episcopal See. By A. CLUTTON-BROCK. London : George Bell & Sons.

THOUGH all the volumes of this series have one object and arrangement, they necessarily vary a good deal in style and treatment, and especially in interest, this variation arising as much from the different attainments and sympathies of the writers as from the varying interest of the buildings and the treatment appropriate to them. While the series loses something of symmetry in these differences, it gains greatly in interest, and especially in value and completeness as a treatise on our Cathedral architecture. The particular value and interest of the present volume lies in the author's thoughtful criticisms of the architecture of York Cathedral, and his examination and analysis of its beauties and of what he calls "the strange ineffectiveness" of some parts. Such a treatment is very appropriately and usefully applied in this case, since most persons who see the building for the first time, especially if they are familiar with other great Cathedrals, are influenced by this ineffectiveness and are uneasily conscious of a difficulty in admiring it as much as they think they ought to do. Mr. Clutton-Brock shows that, as regards the nave and west end at any rate, the impression is justified; and although he praises the choir, and especially the retro-choir, he plainly admires it chiefly for the beautiful old glass in the windows. His criticism is, indeed, very destructive. Of the upper part of the west towers he says :—"Nowhere else, surely, has a Gothic architect approached so closely to the ideals of his 'churchwarden' imitators of the beginning of this century." And on page 73 there is the following passage applied to the nave, but equally applicable to the whole church : — "It is a significant fact that the builders were afraid to place a stone vault on their nave, and thus it is a Gothic building without that feature which gives its whole significance to the Gothic style, and by reason of which the design of this nave came to be what it was. It is a curious paradox that the builders of York should have abandoned one of the most attractive features of earlier art (a separate triforium arcade) in pursuit of a more logical design, and should then have been forced to abandon that very vault which gave their design all its logic." We cannot say whether the author himself attaches the greater importance to these and similar passages, or to those in which he finds something to admire ; but the latter read rather as if they were dictated by a consciousness of holding some sort of brief for the minster, and a desire to say all he can for his client. Indeed, the book as a whole confirms and justifies our previous impression that York Cathedral, except for its stained glass, its "five sisters," the de Grey monument, and a few minor details, is an over-rated building, as great cathedrals go.

The Cathedral Church of Southwell : a Description of its Fabric and a Brief History of the Episcopal See. By the Rev. ARTHUR DIMOCK, M.A. London : George Bell & Sons.

WHILE fulfilling its main object by recording the facts with general accuracy and reasonable fulness, this is a less satisfactory book than most of the volumes of Messrs. Bell's excellent series. The short historical part is uninteresting, and some of the statements are a good deal more positive than the evidence warrants. It is very likely that, as the author says on page 8, "the Jewish money-lenders of York and Lincoln assisted in the building of Southwell" ; but the only proof adduced for this positive, detailed assertion is the general conclusion of Mr. Green that, in Norman England, "castle and cathedral alike owed their existence to the loans of the Jews." The descriptive portions are too palpably coloured by the prejudices of the writer ; prejudices common enough, unfortunately, a generation or so ago, but which now seem singularly puerile. It would be almost inconceivable, had we not heard it with our own ears, that any student of Gothic architecture, though he might prefer another period, should ever have sweepingly characterised Perpendicular work as "ugly" or "debased." Yet Mr. Dimock evidently adheres to this exploded view, as shown by the following excerpt from a long passage to the same effect on pages 35-37 :—". . . . Let us," he says, "in our ecclesiastical architecture fix upon the exact year of 1350. Let us compare in the same building what was finished before this with what was finished after, and we arrive at this result—evolutionary development of beauty before, evolutionary development of ugliness after. . . . ." This reflection is a general one ; if it had been confined to Southwell an excuse for it might have been found in the poverty of the few windows which represent the Perpendicular style there ; though it would still have been ridiculous to call the west window "the great eyesore and disfigurement of the building." Some of the main points of interest in the architecture are well brought out, but we cannot find any remark on the unusually squat proportions of the Norman arcades. The interest of the aisle vaulting with its Norman groin ribs is alluded to ; but while matters of minor import are pointed out, nothing is said about the significant expedients the builders had to adopt to fit their round arches to such a purpose, or the curious way in which, in some cases, one diagonal rib has been completed and the other left to butt up against it on each side. The unique beauty of the Chapter House and its carvings are well worthy of the unstinted appreciation Mr. Dimock accords them ; but he might have said a word on behalf of the marvellous Mansfield stone in which all the minute undercut foliage is executed, and which still preserves every contour and arris, even every mark of the tool, as fresh as on the day the mason left it. In conclusion, we may add that, though we recognise the propriety of avoiding technical descriptions in popular handbooks as far as possible, such a policy leads not only to a good deal of circumlocution, but, if carried too far, to some obscurity. We have tried honestly, but in vain, to grasp the meaning of the following sentence in the description of the Chapter House doorway on page 92 :—"The outside member of the main arch, which carries the hood, stands apart against the wall ; the others are against the main jamb, of which the mouldings are visible underneath." The view of the doorway, from a photograph,

which faces page 92, is a very good one, but it does not help us.

The Cathedral Church of Gloucester. A Description of its Fabric and a Brief History of the Episcopal See. By H. J. L. J. MASSÉ, M.A. London : George Bell & Sons.

THIS is a particularly interesting summary account of a particularly interesting building. The author has no doubt had a rather easier task than have some of the writers of this series of volumes, inasmuch as the literature of Gloucester Cathedral is less voluminous and more reliable than in some other cases. With the conclusions of Professor Willis, Mr. St. John Hope, and the devoted cathedral architect, Mr. Waller, before him he must have felt his labour greatly lightened. But our thanks are none the less due for the care, taste, and scholarly acumen with which Mr. Massé has selected, arranged, and remarked upon his material. He appears to be almost equally at home in dealing with the history of the fabric, with ritual arrangements or stained glass, heraldic devices or the organ and church music. We should not have been inclined to quarrel with a less judicial tone, in this case, in descriptions of the beauty and interest of the structure ; it is only when speaking of the tower that any of the enthusiastic appreciation often wasted on less worthy objects is shown. To many people Gloucester is the most beautiful and by far the most interesting, structurally, of our cathedrals, though historical associations and minor causes place others above it in the popular imagination. And this monograph is worthy of it as regards both the letterpress and the illustrations. To Mr. Waller it admittedly owes much, and not least some exceptionally good plans and sketches, and a very interesting view, on page 15, of the remains of the original structure stripped of those clever later additions that have converted what is still mainly a Norman building into one that appears at first sight, from many points of view, a wholly Perpendicular one.

Laxton's Builders' Price-Book. Eighty-second edition. London : Kelly's Directories, Limited. 1899.

Lockwood's Builders, Architects, Contractors, and Engineers' Price-Book. Edited by FRANCIS T. W. MILLER, A.R.I.B.A. London : Crosby Lockwood & Son. 1899.

THESE two annual volumes, which appear to vie with each other in the matter of growth both in the variety and completeness of the information, have again made their appearance.

The first named of these books is growing in bulk as well as in years to such an extent that the late "Henry Laxton," by whom the work was originally compiled (to quote the title-page) would hardly recognise it, and one cannot help thinking that the prices in this issue compared with those in the issues in which he had a hand would make that recognition still more difficult ; such is the continual advance in prices and the continual addition to the already large variety of building materials that the revision of such a work as this is an undertaking of some magnitude ; and this appears to have been conscientiously carried out in the volume before us. We are glad to see that the brickwork prices in particular have been brought up to date, instead of leaving the reader to make a calculation from prices that were obviously inadequate.

The notes referring to the various descriptions of stone continue to be a useful feature, but we should prefer to see a different arrangement of labours than that appearing on page 100. We do not think many surveyors measure these on the lines thereon set forth. A much better arrangement is that on page 91, giving the quarry prices, and one that is more in accordance with general custom.

Lighting by electricity being now so general, more than warrants the space given to it, and the various rules, tables, and comparisons will be found of assistance.

The table on "the adaptation of a price-book to meet varying rates of wages," given on pages xxxvi. and xxxvii. will hardly be found so useful as anticipated in the preface, as either the examples are not based upon the rates given, or if they are, are anything but clear in their explanation. This is, of course, a matter of small importance compared with the contents of the whole book, but if given at all should at all events be perfectly clear.

The various chapters at the end of the book referring to Acts of Parliament and other matters of a legal nature, will be found useful and convenient for reference, and possibly some of the decisions in the superior courts reported may help to solve some of the problems continually arising from the ambiguous wording of some of these Acts of Parliament.

The second book mentioned in our heading, while not being quite so bulky or able to lay claim to so long a life as "Laxton," is at any rate no mean rival, and may be considered to have taken a permanent position as a standard work on the subject of builders' prices. The chapter relating to mason's work is a particularly strong one, and the general arrangement of this chapter and the consistency of the pricing is all that can be desired. The arrangement of labours is carried out thoroughly in accordance with that found in a well-prepared mason's bill. The electric lighting chapter is also a remarkably good one. We think the price of 50s. per M. for stocks delivered is somewhat high as a basis of the price for brickwork even in this time of high prices.

This book is thoroughly up to date and contains numerous useful chapters and notes upon matters that not many years ago would have been thought out of place in a price-book, but are nevertheless welcome ; not the least useful being the chapter on legal notes and memoranda, backed up as it is by references to decided cases.

Both books are well arranged and bear the impress of careful editing and each will do its part in keeping up the reputation of works now so familiar to the building world. Yet with all our appreciation of the usefulness of these two works, we are unable to praise them without a certain amount of reserve when we make a comparison of the prices. It is evident that some note or notes should be given showing the basis of pricing. One cannot help thinking that in the majority of cases that basis must be a very unstable one, as the following examples will show. These are taken at random and of very diverse description. Laxton (p. 51), brickwork all in stocks, 17*l.* 2s. 6d. per rod ; Lockwood (p. 43), the same item (taken on the basis of the calculation set forth in the heading), 16*l.* 15s. Laxton (p. 73), blue or red Staffordshire quarries, 6 in. by 6 in. by 1 in., 7*l.* 10s. per M.; buff do., 8*l.* per M.; blue or red do., 9 in. by 9 in. by 1¼ in., 12*l.* per M.; buff do., 13*l.* Lockwood (p. 56), 5*l.* 5s., 5*l.* 10s., 9*l.* 10s., and 10*l.* respectively. Laxton (p. 88), Doulting stone at Paddington, 1s. 9½d. per foot cube ; at Nine Elms, 1s. 11½d. Lockwood (p. 72), 1s. 6½d. and 1s. 7½d. respectively. Laxton (p. 100), Portland stone, 2s. 8d., 3s. 6d., and 4s. 9d. per foot cube. Lockwood (p. 87), 3s. 3d., 4s., and 4s. 8d. per foot cube for similar items. Laxton (p. 155), oak cleft fencing, 4 ft., 5 ft.. and 6 ft. high, 44s., 54s., and 66s., per rod respectively. Lockwood (p. 152), 31s. 8d., 40s. 10d., and 54s. 2d. per rod for similar items. Laxton (p. 158), and Lockwood (p. 210), the prices for wainscot and mahogany display striking discrepancies, *e.g.*, ⅛ in. wrought both sides; in the former, wainscot or Honduras mahogany, 1s. 1½d., Spanish, 1s. 6½d. ; in the latter, wainscot, 1s. 7d., Honduras mahogany 1s. 6d., and Spanish, 2s. 1d. And, again, Laxton (p. 185, &c.), and Lockwood (p. 212, &c.), the prices for Spanish mahogany show amusing discrepancies, especially when one compares those for Honduras, which are in many cases almost identical. The foregoing examples, taken from two standard works, both prepared with evident care and a good knowledge of the subject, serve to show that (and this is backed up by a comparison of contractors' prices for actual work) there is a marvellous diversity of opinion even amongt authorities. This is more surprising with those items of every-day usage, and where there are regular market prices for material, the only open question being that of labour. The fact, however, remains, and it seems to indicate that, however good a price-book may be, it should only be used with a due regard to the special circumstances of the individual case before the estimator.

BAPTIST CHAPEL, READING.—The foundation-stone of a new Baptist chapel has just been laid at the corner of Grovelands-road. The chapel measures 72 ft. by 38 ft. inside, and will be 26 ft. high. It will provide accommodation for 450 people, and arrangements are being made to increase the number of sittings when necessary by successive enlargements to 520, and eventually 650. Messrs. Cooper & Howell are the architects, and the builders are Messrs. Collier & Catley.

TRADE CATALOGUES.

THE new Lincrusta-Walton catalogue is a production of higher artistic interest than usually belongs to trade catalogues. It contains a number of reproductions in relief of the embossed patterns for dadoes, fillings, and friezes, made in Lincrusta-Walton, on a reduced scale from small dies. The general character of the designs, as our readers probably are aware, is excellent, and the reproductions on this small scale have an exceedingly pretty effect on the page, while they enable the intending purchaser to make a better choice than he could make from illustrations on the flat. The designs also include ceilings.——The "B. & S. Folding-Gate Company," whose folding gates have proved most useful for lift doors and other similar situations, are also carrying out artistic metal work, and their present catalogue includes designs for enclosing railings, grilles (not "grills," as spelt in the catalogue), chandeliers and electroliers ; the latter were designed in the first instance for use in lift cars, but are suitable for other purposes. There is a general good character about the designs ; among other things the makers have been successful in producing a good effect by the combination of small and comparatively simple repeating patterns in grille fences, as in Nos. 700 and 701. The gas-lamps or "gas fixtures," as they are called, are good ; better than the electric light fixtures, which are not very good specimens of design ; in fact, electric lighting has not given rise to the development in lighting design which might have been expected. ——Mr. Joseph Hamblet (West Bromwich) sends us his illustrated catalogue of Staffordshire terra-metallic pavings, some of them with the roughing arranged in decorative patterns, which some purchasers may prefer ; we think ornament is rather out of place on a floor destined for hard wear, and prefer the simple bevelled squares or crosscut patterns, which at all events look more lasting. The catalogue also shows Staffordshire vitrified blue bricks for channels, &c., and terra-metallic bricks for copings, window-sills, cornices and string-courses, &c. ; one useful application is to form projecting half-round channels, built into the wall, for wall creepers, ferns, &c. We may also notice the machine-made invert blocks, and roofing tiles.——Messrs. Moetler & Co. send an illustrated catalogue of paraffin small ranges and heaters ; also their "Ætna" and other brazing-lamps and blow-lamps ; and an illustrated list of reserve parts in stock for the repair of any of these articles.——Messrs. G. M. Callender & Co. send a pamphlet in regard to their "pure bitumen damp-course," for which they claim, among other advantages, that it will not crack with any settlement of brickwork, being too elastic and yielding to any movement. We believe it is a very good damp-course, and the quality of yielding to settlement without cracking is an invaluable one for any damp-proof course, though it is going a little too far to say that settlement is "fatal to all other systems of damp-course."

The Student's Column.

ARCHITECTURAL HYGIENE:

XII.—TYPICAL DRAINAGE PLANS.

IN commencing this article perhaps a few general remarks will be of value, although most of these have already been previously given.

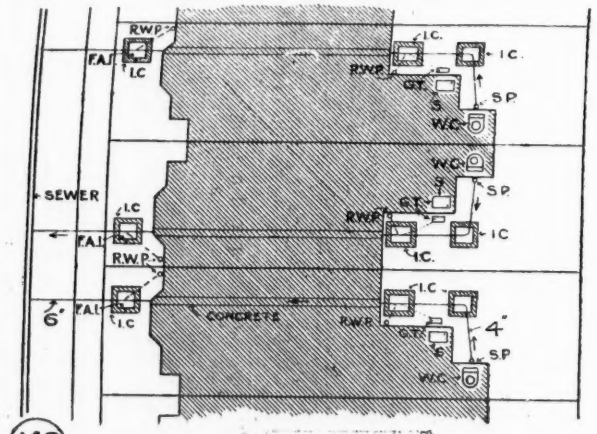
It should be remembered that among the essentials of a good drainage system are the following :—

1. The rapid removal of sewage, this being governed by the fall of the pipes. This should be carefully attended to, as in the event of the fall being too great the liquids will pass away and leave the solid matter behind. It is generally agreed among experts that a rate of 4 ft. 6 in. per second is a safe velocity, but where a special drain for rain-water is constructed so great a velocity is not necessary, and 2 ft. 6 in. to 3 ft. per second is quite sufficient. It is usually sufficient to allow the following inclinations :—

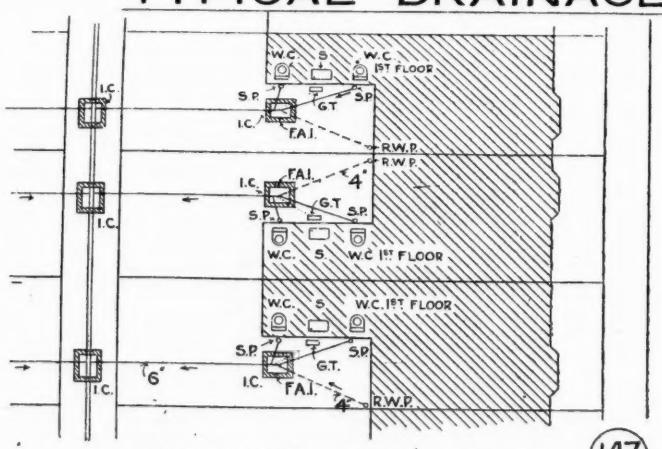
A fall of 1 in 40 for 4-in. pipes.
Do. 1 in 60 for 6-in. pipes.
Do. 1 in 90 for 9-in. pipes.

2. The careful laying of the drains, so as to ensure their safety in the future. The pipes should be laid on a bed of concrete, and pro-

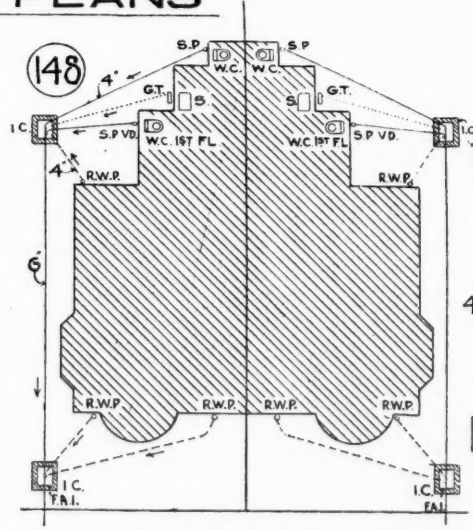
TYPICAL DRAINAGE PLANS



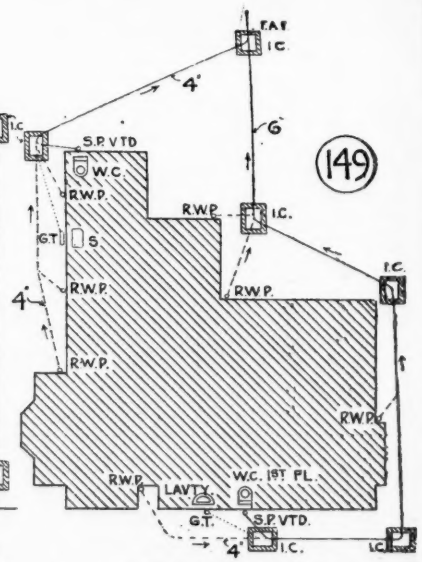
146 TERRACE HOUSES DRAINED TO FRONT STREET



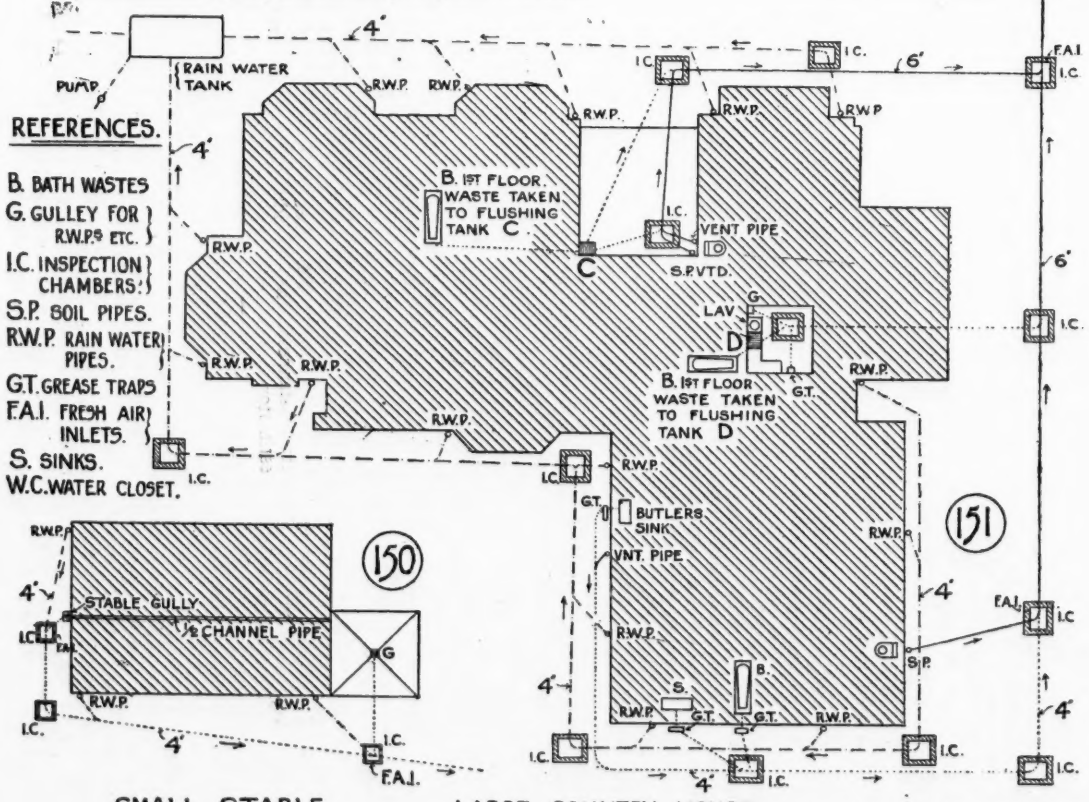
TERRACE HOUSES DRAINED AT BACK 147



SEMI-DETACHED HOUSES



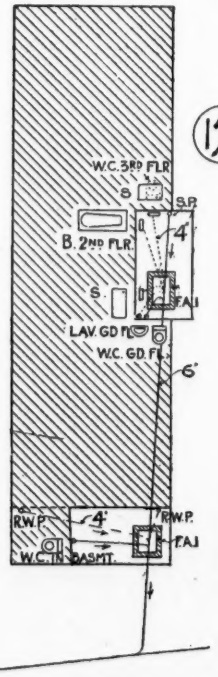
DETACHED HOUSE



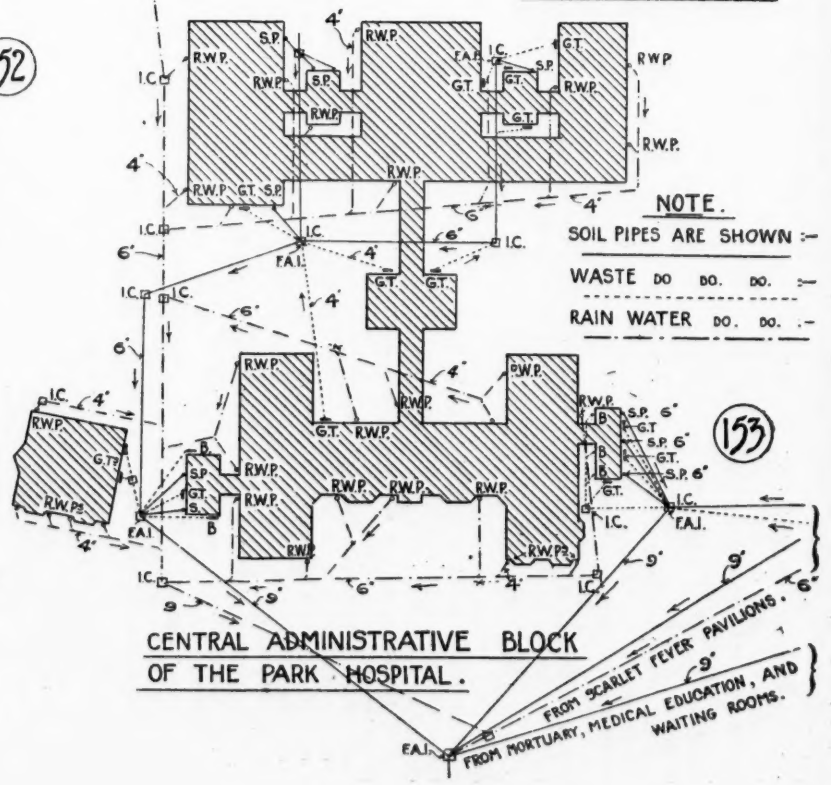
151

SMALL STABLE.

LARGE COUNTRY HOUSE, SHOWING COLLECTION AND STORAGE OF RAIN WATER



TOWN HOUSE



CENTRAL ADMINISTRATIVE BLOCK OF THE PARK HOSPITAL.

Illustrations to Student's Column.

perly jointed with Portland cement as before described.

3. The proper ventilation of the whole system of drainage on the house side; and to ensure this the inspection chamber should have a mica-flap fresh-air inlet, and every soil-pipe should be carried up above the roof with an open end.

4. Where possible, and where there is a small amount of water at one's disposal, an automatic flushing tank should be fixed for periodical discharge into the drain. In this can be collected, if desired, the wastes from baths, lavatories, sinks, &c.

5. All rain-water pipes and bath wastes should discharge over gully traps and should be disconnected from the drain.

All soil pipes should be carried direct to the manholes without gully traps, and should be carried well above the roof with an open end.

The following typical drainage plans are given :—

a. Terrace houses drained towards front street.
b. Terrace houses drained towards the back.
c. Semi-detached houses.
d. Detached house.
e. Small stable.
f. Large country house.
g. Town house.
h. Hospital.

(*a*) *Terrace Houses Drained towards Front Street.*—First we deal with a system of drainage which is often met with in the erection of terrace houses.

In this system it will be noticed by reference to fig. 146 that the drainage empties itself into the sewer laid in the front street, thus necessitating the laying of drain pipes underneath the house. It has already been pointed out in a previous chapter that this is a system which should be avoided, wherever possible, because of its several disadvantages, but in this case it is impossible to use any other system. It should be noted that precaution to a large extent has been taken by embedding the pipes in concrete, so as to give additional security against the entry of sewer gas into the house. The drainage to be dealt with in this case is a soil waste, scullery sink waste, and the rain-water. A reference to the diagram will show how this is effected. Attention need only be drawn to the fact of the necessity of laying the drains in a perfectly straight line, from the house to inspection chamber, and from thence to the sewer. Where the pipes pass through an inspection chamber they should be of half or three-quarter section. Illustrations of these have been already given in previous chapters. A fresh-air inlet is shown at the lowest point of the drain introduced into inspection chamber. The soil pipes in all cases would be carried up well above the roof and covered with a wire cage.

(*b*) *Terrace Houses Drained towards the Back.*—Fig. 147 shows a system of drainage in which the sewer is at the back of the house, thus enabling the sewage from the other side of the street to be discharged into the same sewer. This arrangement does away entirely with the objectionable practice of carrying the drain-pipes underneath the house, with all the attendant trouble and expense in case of anything by chance going wrong. With the drainage under the house it is necessary to break up the floor and the concrete to enable one to get at the obstruction. By referring to the diagram it will be observed that each house has an inspection chamber, into which the soil and rain-water pipes, &c., are taken ; from thence the pipes have a clear run down to the sewer, at the junction of which a further inspection chamber is placed. It will be noticed that in case of a blockage a man would find no difficulty whatever in reaching any part of the drainage system with his drain rods, and thereby removing easily and quickly any obstruction.

(*c*) *Semi-detached Houses.*—The next system to come under our notice is that required for semi-detached houses, which is illustrated in fig. 148. By reference to it, it will be seen that each house is provided with two inspection chambers for the purpose of reaching the branch drains. The planning of these follow out the principles already laid down, namely, that they should be laid in a perfectly straight line with easy bends, so as to help the flow of the sewage into the proper direction to reach the sewer. Care should be taken that the bends should not be abrupt, and that no sharp angles should occur so as in any way to impede the flow of sewage and thereby cause a stoppage. It should also be noted that, where possible, as many junctions should be made in the manholes, so that in case of defects any part of the system can be reached from these.

(*d*) *A Detached House.*—Our next illustration is for a detached house, shown in fig. 149. It will be noticed that, owing to the shape of the building, and of the fact of the sewer being at the back of the house, a larger number of inspection chambers are necessary than in any of the previous examples.

It shows the necessity of planning the house as much as possible so that the sanitary arrangements are placed near each other. This is often difficult to manage, but it should be the architect's aim.

(*e*) *A Small Stable.*—Fig. 150 shows the drainage of a small stable. It will be noticed that a half channel-pipe, 6 in. in diameter, runs the whole length of the stable with a sufficient fall towards the stable gully to carry off all water and other liquids. Of course, the stable floor itself has a slight fall towards this pipe. A gully should be provided with a proper grid so as to intercept all straw and other refuse that might be carried down the channel and thence into the drain. On the right of the stable will be noticed a small washing-place for carriages with a gully in the centre. The flooring of this space should be laid to a fall towards the gully. The water from this portion and the stable is then collected into the inspection chambers and from thence to the sewer. A fresh-air inlet is provided at the lowest manhole.

(*f*) *Large Country House.*—Fig. 151 shows us a method of draining a large country house. It will be noticed by reference to the plan that the rain-water is stored in a tank which is connected to a pump ; this arrangement is very convenient in neighbourhoods where there is not a plentiful supply of water, or where the rain-water can be utilised for domestic purposes. It will also be noticed by referring to the diagram that the waste from the baths is collected into automatic flushing tanks marked D and C, which discharge their contents at regular intervals into the drains, thereby tending to keep them clean and sweet.

(*g*) *A Town House.*—Fig. 152 shows a method of draining a modern town house. In such it is generally necessary to carry the drains for some distance under the house. It will be noticed that the drainage in this case consists of water-closets and lavatories from ground floor, bath-room, second floor, and a water-closet from third floor. The drainage is all connected into one manhole and is easily accessible from it. The drain is then carried under the house. This portion of the drain should be 6 in. in diameter. If of glazed stone-ware, it should be laid on a 6 in. bed of concrete and encased all round with 6-in. of the same material. Some architects prefer heavy cast-iron pipes for under house drainage, but there is always the difficulty of prevention of rust, even when preventitive solutions are used. The advantages of iron piping are that it can be obtained in longer lengths.

Iron pipes lined with glass or with a lead lining can also be used.

(*h*) *A Hospital.*—Fig. 153 shows the system of drainage adopted in the administrative block of the Park Hospital, and is produced here by permission of Mr. Edwin T. Hall, the architect of the building It will be noticed that in this plan also the rain-water is kept separate from the other drains, but it will be seen that the main line of the rain-water drainage is discharged into the last inspection chamber, no attempt being made to collect it for use.

The wastes from scarlet-fever pavilions and offices are also emptied into this inspection chamber before discharging into the sewer.

In draining a building of this description it should have careful thought and consideration, as unnecessary expense and trouble can be avoided by so doing, and what looks at first sight to be a very complicated plan is really thoroughly simple and efficient.

BAPTIST CHAPEL, DARNALL, SHEFFIELD.—A new chapel is being erected in Darnall-road for the Baptists. The buildings will comprise a school chapel —to be called the Ebenezer Chapel—36 ft. by 53 ft., with accommodation for about 300; an infants' school room 27 ft. by 17 ft.; three class-rooms, and vestries. The only portion of the buildings now in course of erection is the school chapel. It will be a brick structure, and is being erected under the supervision of Messrs. Hemsoll & Paterson, architects. The cost of the present building will be about 1,000*l.*

Correspondence.

To the Editor of THE BUILDER.

THE NEW ARCHITECT OF THE L.C.C.

SIR,—You have not called attention to what will result from the selection of the Council. For twelve years the District Surveyors and Architects have been in the habit of taking counsel with Mr. Blashill on various matters connected with his office, well knowing that he has had large experience in building in London, and a practical knowledge of the Building Act acquired when a District Surveyor. I understand that for over twenty years the new Architect has had nothing to do with building in London or with the Building Act. It looks very like appointing a junior common law barrister to be a Chancery Judge.

It will now be felt that any opinions emanating from the office are given by a member of the staff.

The management of men seems a strange qualification for an architect; surely a contractor's manager would have done. It is possible, however, that the new London Bill will supersede the Superintending Architect, so that the above difficulty will not exist.

OBSERVER.

THE NEW GOVERNMENT OFFICES.

SIR,—All your readers will be grateful to you for the interesting views and plans of the proposed new Government offices which found a place in your last issue.

Referring to your criticism upon Mr. Brydon's very able design, I think most architects will agree that the high attic is too long. If the top windows were omitted, the balustrading carried on, and a sculptural group placed where the windows occur, a much better effect would be produced, and the sky-line would gain greatly by the change.

Windermere. ROBERT WALKER.

THE DISPOSAL OF HOUSE REFUSE.

SIR,—I should be glad if you would allow me to ascertain, through the medium of the *Builder*, the views of my fellow-readers as to the best way of disposing of the house refuse from a large country mansion.

It consists of soil from earth-closets, ashes, animal and vegetable refuse from the kitchens and sculleries, tins, bottles, paper, crockery, &c.

I have hitherto carted it to a tip, but for various reasons can do so no longer, and must get rid of it some other way.

My idea is to build a destructor, on the same lines as those in use, I understand, in some of the districts of London, but on a smaller scale, and, if necessary, modified to suit this special case.

I should not have enough refuse to keep the destructor always going, but could store the refuse in a shed to keep it dry until I had a large heap, and then light up and burn it.

I shall be grateful for any information, advice, or suggestions respecting this matter, and for any replies to the following questions :—

Where, in London or in the country, is there a destructor that I could see ?

Is there in the market a portable or semi-portable destructor or furnace made of iron and lined with fire-clay or ganister that will burn such refuse as I have described ?

ESTATE CLERK OF WORKS.

OBITUARY.

MR. BIRKET FOSTER.—We regret to hear of the death of Mr. Birket Foster, which took place at Weybridge on Monday. Mr. Birket Foster was a water-colour painter of remarkable ability, who at one time enjoyed a reputation which art-critics of the younger generation are probably hardly aware of ; some thirty to forty years ago he was currently looked on as the leading water-colour artist of England, and very small studies from his brush commanded very large prices. He continued painting as well as ever up to the latest date that he exhibited, but the point of view had changed. Mr. Birket Foster was always a conscientious artist according to the standard he had adopted ; but it was a conventional standard, not founded on truth to Nature so much as on an adopted scheme of his own, and hence did not retain its place. Among artists of this conventional school, however, he was exceptionally gifted. Mr. Foster was seventy-four years old at the time of his death.

MR. WILLIAM HAGUE.—We regret to announce the death of Mr. William Hague, the Dublin architect. Mr. Hague designed several important architectural works, both in Dublin and the provinces.

SOLDIERS' MISSION HALL, WINCHESTER.—A new mission-hall in connexion with the Winchester Soldiers' Home has been opened in the High-street. The building has been erected by Mr. G. Evans, from the designs of Mr. T. Stopher, architect, Winchester.

GENERAL BUILDING NEWS.

REOPENING OF DROMORE CATHEDRAL, IRELAND.—The Cathedral Church of Christ the Redeemer, Dromore, which has been closed since last December, while undergoing extension and a course of internal decoration, has just been re-opened. The principal change made in the building has been the removal of a gallery from the west end and the construction of an addition on the north side. The main aisle of the church has also been made of uniform width, and new seats added. In the centre of the north side of the church a gallery has been erected. The font has been removed from the main aisle, and a baptistry formed at the north side of the chancel, while the chancel has also received attention, a tile floor and marble steps having been added. The plans for the alterations and additions were prepared by Mr. Henry Hobart, C.E., and the contract has been carried out by Mr. John Graham, jun. Messrs. Musgrave & Co. were responsible for the heating arrangements, and Messrs. Carlisle & Wilson for the stained glass.

PARISH CHURCH, KILBARCHAN, RENFREWSHIRE.—The joint committee for the erecting of a new church at Kilbarchan have accepted tenders for the erection of the new building. The architect is Mr. W. H. Howie, Glasgow. The church, which will consist of nave, transept, and apse, is estimated to cost upwards of 6,000*l.*, and is being built on a site adjoining the present church.

SCHOOL ACCOMMODATION, LERWICK, SHETLAND.—The School Board of Lerwick recently resolved to provide additional school accommodation for the burgh at a cost of 5,100*l.* The scheme which was finally approved of involved the demolition of one of the existing schools, the Central, and the construction in its place of a three-standard school, containing Board-room and other conveniences. An addition was also proposed to be made at the Anderson Institute School, which would give accommodation for two standards, besides providing room for drill, cooking classes, and other purposes. The scheme was arrived at after consultation with Mr. Wilson, architect for the Edinburgh School Board, who prepared the plans. At a recent meeting of the Board the bearing of the new Code on the building scheme was discussed. It was reported that the plans had been approved by the Department, but, it being considered that the changes contemplated by the Code would alter the whole scheme, it was resolved to instruct the architect to delay any further procedure.

UNITARIAN SCHOOLS, BRADFORD.—On the 23rd ult. the new schools in connexion with Chapel-lane Unitarian Chapel, Bradford, which have been built on the site of the old schools behind the chapel, were opened. The schools have been built from the plans of Messrs. Empsall & Clarkson, whose designs were accepted in limited competition, and under whose superintendence the erection of the buildings has been carried out by the following contractors:—Messrs. T. Shackleton & Co., masons and bricklayers, Clayton Heights; Mr. W. M. Binns, carpenter and joiner, Bradford; Mr. Henry Lindley, plumber and glazier, Leeds; Mr. Andrew Taylor, plasterer and tiler, Eccleshill; Messrs. William Thornton & Son, slaters, Bingley; Mr. D. E. Hutton, painter, Shipley; Mr. J. Anderson, hot-water engineer, Bradford. The new schools are in a building with three floors. The ground floor is divided into a general school room and three class-rooms, and above these is an assembly-hall, called the Channing Hall. The assembly-hall has a platform at one end.

ABERDEEN NEW MARKET BUILDINGS.—It has been resolved to provide a refrigerating chamber in these buildings, according to plans by Mr. W. Kelly, architect, Aberdeen.

PROPOSED SLAUGHTER-HOUSE EXTENSION, ABERDEEN.—Plans for a proposed extension of the slaughter-house in Wales-street, Aberdeen, belonging to Aberdeen Flesher Incorporation, have been prepared by Mr. John Rust, jun., architect, Aberdeen. The estimated cost is upwards of 17,000*l.*

HAMPSTEAD PUBLIC BATHS.—On the 24th ult. Colonel C. H. Luard, R.E., on behalf of the Local Government Board, held a public inquiry into an application of the Hampstead Vestry for sanction to borrow 5,950*l.* in connexion with the recent additions and fittings of the new public baths in Finchley-road, of which Messrs. Spalding & Cross were the architects.

WEST HAM CORPORATION HOSPITAL, DAGENHAM.—The County Borough of West Ham having acquired the Rookery Farm at Dagenham, Essex, 116 acres in extent, have isolated a space of $3\frac{3}{4}$ acres on which they have erected a small-pox hospital, from designs prepared by Mr. Lewis Angell, the Borough Engineer and Architect. The hospital has the following accommodation:—An entrance lodge and offices; an administration block, including the medical officer's and matron's rooms, twenty-eight bedrooms for nurses and attendants, mess-rooms, dispensary, kitchen, laundry, and other offices; two pavilions containing four wards, each ward 60 ft. long by 26 ft. wide, also a receiving-room, bath-rooms, nurses' duty-rooms, and sanitary annexes; isolation block for four beds and offices; and disinfecting block, laundry, disinfecting chamber, and mortuary. The hospital will accommodate forty-four patients and the necessary staff. The materials used are stock bricks with Portland stone and red brick dressings.

NEW BROMPTON CO-OPERATIVE SOCIETY'S BAKERY.—This building is designed entirely for the manufacture of bread, cake, pastry, and confectionery. The ground floor has a loading shed to the front, where the vans are loaded from the cooling-room, which is divided off by revolving shutters so arranged that the cooling of the bread is not affected to any extent while vans are being loaded. From this cooling-room there are two entrances to the bakery proper, which is 60 ft. square and 15 ft. in height. It has six ovens upon one side, with space for a similar number on the opposite side when required. Through a doorway at the far end is a corridor, from which the dining-room, lavatories, engine-room, coal store, &c., are reached, with a doorway opening into yard. In one corner of the bakery is the staircase leading to the first floor. Here are kneading and sponge rooms (the latter fitted with hot-water apparatus to regulate the temperature) and a pastry and cake bakery, with provision for two ovens. On the top floor is the flour store, capable of storing between 2,000 and 3,000 sacks of flour. The three floors are connected by a lift fitted with automatic safety gear, the lift well having openings both sides at bottom, so that the lift may be emptied or loaded with equal convenience from either bakery or cooling-room. It is worked, with the other machinery, by a gas-engine. The whole of the machinery plant, supplied by Messrs. Baker & Sons, of Willesden, is of the most moderntype, comprising, on the second floor, the hoist-gear for the lifting of flour from the vans 40 ft. below, also a blender on the same floor, from which the flour passes (after being mixed and blended) through a tube to the kneader on the floor below, which is capable of kneading two sacks of flour at one time. The dough is passed down a channel to the ground floor to a rather complex piece of machinery which divides, weighs, and forms it into loaves, placing it on tables ready for ovens. The building is built with white glazed bricks to all internal walls. The floors are fireproof and covered with wood blocks carried with steel joists, on girders supported at intervals by columns, four to each floor. The roof is spanned by wrought-iron principals, and covered with slates The exterior walling consists of best local stock bricks, with Batchelor's red bricks to arches, strings, quoins, and gable and eaves-courses. The architect is Mr. E. J. Hammond, the builder Mr. J. H. Harris, of Chatham. There is a retail shop adjoining, with the usual stores and offices. The whole has been erected at a cost of between 8,000*l.* and 9,000*l.*

COTTAGE HOMES FOR CHARD.—Cottage Home buildings are to be erected at Chard in commemoration of the Diamond Jubilee. The architects are Messrs. Symes & Madge, of Chard.

NEW THEATRE, BORDESLEY, NEAR BIRMINGHAM.—The new Imperial Theatre, Bordesley, is now in course of erection, and it is expected to be ready for opening in October. The plans have been prepared by Messrs. Owen & Ward. The building has two frontages, one to High-street of 104 ft., and the other to Clyde-street of 134 ft. There are arranged twelve exits from the various parts of the house, communicating directly with the streets, and each section of the building has at least two fireproof staircases connected therewith. The grand hall leading to circle and stalls is approached through three pairs of mahogany and glass doors, and is 25 ft. by 20 ft., with staircases on both sides leading to the dress circle. The ceiling of the hall will be domed and decorated with hand-painted panels illustrative of Shakespeare's works, and the walls will be lined with marble in parti-colours, and the floors paved with marble mosaic. The interior accommodation is arranged into orchestra and pit stalls, pit, dress circle, balcony, and gallery, together with six private boxes, and will seat 2,500 persons. The auditorium is 69 ft. by 65 ft., and the stage is 69 ft. by 40 ft. Saloons are arranged to all parts of the house. There are also offices, wardrobe-room, ballet-room, &c. Both gas and electricity will be employed for lighting purposes throughout. The interior decorations will be principally of fibrous plaster in the Renaissance style, the prevailing colours being cream, blue, and gold; whilst the draperies and upholstering will be in old gold silk. The elevation to High-street is in red Ruabon brick, with buff terra-cotta dressings by Messrs. Doulton & Co., the two extreme angles being surmounted by square towers, whilst a gabled pediment adorns the central feature. An ornamental iron and glass verandah is placed as a shelter over the principal entrances. There will be a fireproof curtain to the proscenium opening.

BUSINESS PREMISES, BRISTOL.—A block of business premises having frontages in Wine-street and The Pithay and Tower-lane have been erected for Messrs. Harris & Sons, ironmongers, &c. The materials used were Cattybrook brick with Bath stone dressings. The architect was Mr. Henry Williams, and the builder Mr. George Humphreys.

SANITARY AND ENGINEERING NEWS.

GREAT YORK-STREET SCHOOLS, HANLEY.—These schools have been heated and ventilated by Messrs. Matthews & Yates, of Swinton, on the Plenum system, a large Cyclone Air Propeller being used for the fresh air supply, in conjunction with heaters for each room. The vitiated air is extracted by means of Cyclone electric fans, placed at convenient points in the roof. Messrs. Scrivener & Sons, of Hanley, are the architects.

FOREIGN.

FRANCE.—M. Rodin has been commissioned by the Société Nationale des Beaux-Arts to undertake a statue to the memory of Puvis de Chavannes, which is to include a reproduction of M. Rodin's bust of the painter in the museum at Amiens. The bust will be placed on a stele supported by a female figure symbolising "Peinture."——Some excavations on the left bank of the Seine at Paris, for the Orléans Railway Company, have led to the discovery of the substructure of the "Petit Châtelet," demolished in 1782.——In the small square in front of the Théâtre Francais the Paris Municipality intend to have underground conveniences constructed after the model of the recent ones in London.——The death is announced of M. Modot, architect to the commune of Châtenay, who took an important part in founding the series of prizes established by the Société Centrale des Architectes.—The death is announced of M. Jules Printemps, the sculptor, who was a pupil of Jouffroy and of M. Falguière.——The Société des Aquarellistes Français has opened its twenty-first exhibition in the Galerie at the Champs Elysées. It is a small collection of works of considerable refinement. Among the exhibitors are MM. Besnard, Aublet, Jourdain, Jeanniot, Adrien Moreau, and Maurice Lenoir; the latter exhibits about ten studies of eighteenth-century scenes in his well-known style. The Spanish scenes by M. Worms, the animal paintings by M. Guignard and M. Julien Dupré, and the "Cadets de Gascoyne," by M. Vibert, are among others of the best works; and M. Vibert's own portrait is exhibited by M. Vollon.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. F. Gleadow, civil engineer, has removed his office from 13, Victoria-street, to Parliament Mansions. Victoria-street, Westminster, S.W.—— Mr. Joseph Blackburn, electrical engineer and contractor, of Nottingham, has converted his business into a limited company under the style of "Blackburn, Starling, & Co., Limited."——Mr. George P. Allen, architect and surveyor, has removed his offices from 6, John-street, Adelphi, to 3, New Inn, Strand.

PREVENTING OAK FROM BECOMING WORM-EATEN.—It is necessary that the sapwood should be deprived of starch. According to E. Mer, in the *Comptes Rendus*, the drying and absorption of the starch from the sapwood is effected much more rapidly if the bark is removed in a ring below the branches and in another ring near the base of the trunk than when the bark is completely stripped from the trunk, or in a ring below the bottom branches only. Removal of the bark from the bottom of the trunk alone is said to leave the tree more susceptible to the attacks of insect larvæ and to the growth of fungi.

PARIS EXHIBITION, 1900.—PROTECTION OF PATENTS.—It has been the custom, on the occasion of every recent International Exhibition held in France, to pass a temporary Act, giving protection to patents, designs, and trade marks, in addition to the Act of May 23, 1868, which is quoted in the French Regulations of the Paris Exhibition of 1900. In view, however, of a recent decision of the French Court of Appeal, which has attracted much attention, the French Government are taking special steps to protect exhibitors in 1900. The Royal Commission for the Paris Exhibition have been officially informed by the Consul-General of France that a Bill will shortly be laid before the French Chamber, in which certain clauses referring to the invalidation of patents are suppressed. The Act of 1868 will be re-enacted on the present occasion with some amendments. It will give the owner of a design the rights conferred by patent from the date of admission to three months after the close of the Exhibition without prejudice to any patent or registration which he may effect before the expiry of that period. This gives a longer protection than is afforded in similar cases in the United Kingdom by British law, which specifies that application for the registration of the design must be made before or within six months from the date of the opening of the Exhibition. Her Majesty, by an Order in Council dated February 2, 1899, has declared that the provisions of Sections 39 and 57 of the Patents, Designs, and Trade Marks Act of 1883 shall apply to the Paris Exhibition of 1900. This relieves exhibitors from the conditions specified in the said Sections of giving notice of their intention to exhibit The new French Act, it is believed, will give British subjects greater protection than the ordinary British law affords to French subjects; and this, coupled with the fact that French judicial decisions have no effect as binding precedents, should allay any fears which British exhibitors may entertain with regard to exhibiting at the Paris Exhibition of 1900.

YORKSHIRE FEDERATION OF BUILDING TRADES EMPLOYERS.—A meeting of the Yorkshire executive of Building Trades Employers was held at the

People's Hotel, Harrogate, on the 23rd ult., Mr Spink, of Sheffield, presiding, and thirty-three delegates were present from Leeds, Sheffield, Hull, Bradford, Halifax, York, Barnsley, Huddersfield, Harrogate, Spen Valley, &c. Offers of support from kindred associations and individuals affected were reported from all parts, and the question of a general lock-out was fully considered, and resolutions passed thereon. The meeting throughout was most enthusiastic in its determination to suppress the constant tyranny practised by trade unionists throughout England, and arising out of the plasterers' lock-out. The executive, before dispersing, received the master builders of Harrogate and surrounding towns, and were asked to explain the aims and objects of the Federation, and to receive them into membership. It was pointed out that those union men who were working in Scotland were working at a great disadvantage. The Federation complained that the matter had not been put to the men in a proper way, the vote having been taken by a show of hands instead of by ballot, and that what Mr. Dellar, the operative plasterers' secretary, asked for was a vote of confidence in the union, and did not ask the questions submitted by the masters. The Federation strongly resented the report that they seek to smash up the men's union, the question being one directly affecting the principles and wages or hours.

EARLY ARCHITECTURE IN WARWICKSHIRE.—Mr. J. A. Cossins, in a paper read before the Archæological Section of the Midland Institute recently on "Early Architecture in Warwickshire," said: "Though it cannot be called a work of architecture, the great monolith, called the King's Stone, at Long Compton, is the oldest erection by man in stone remaining in the county. Of Roman buildings we have nothing or next to nothing. The oldest fragments of building remaining are very probably some fragments of masonry in the wing wall which crosses the moat at Tamworth Castle and the ground and second stories of the central tower of Wootton Wawen Church. These are of the kind generally called Saxon; but although the well-known arches of the tower at Wootton Wawen have all the most prominent characteristics of that style, it is very probable the church was not built by the great and influential Wagen, from whom the place derives its name, but by Robert de Toner, to whom the Conqueror granted the place very soon after the Conquest, certainly not later than the eleventh century. There are some fragments of wall here and there in some of our oldest churches which may be of a date earlier than 1066, but it is by no means certain that they are so old. There can be but little doubt that for a century or more before the year A.D. 1000 very little building that was not of a slight and temporary nature had been done, for it was very generally believed that the world would come to an end in that year, and in anticipation of the dissolution of all worldly interests many wealthy men had made over their lands and money to the Church. After the year had passed, with a reasonable allowance for errors in computation, it is not surprising, considering how long church building had been neglected and how full the coffers of the Church had become, that building in stone began to be general, and that it was carried on with feverish haste. After the establishment of the Norman power, and during the reigns of the first three kings, cathedrals, monasteries, and churches were built in amazing numbers, but the wealth and energy of the nation during the time of Stephen were bestowed chiefly on building castles. During his reign there were founded, and either wholly or partially built, at least 1,500 castles, of which 1,150, it is said were destroyed by Henry III. How all this building was accomplished in about eighty years, if the population was as small as it is generally supposed to have been, must for ever remain a mystery. There is very little doubt that the Saxons, when they built in stone, made rude copies from the already rude architectural fragments of Roman works, which must have been then very plentiful. But our earliest real Norman work was either done or superintended by masons brought over from the Continent. It was at first rude and simple, with very thick mortar joints, but very soon improved, and very noble and grand works of extraordinary richness were produced. In Warwickshire we have in Bickenhill Church arcade an example of the ruder kind; in Polesworth an arcade as simple, but better executed; and in Beaudesert and Stoneleigh works of extreme elaboration. Of the 288, or thereabout, churches in the county, about eighty-five have remains of Norman work, but there are many more that are of early foundation of which no remains exist that can be recognised as Norman or earlier; about thirty-five are mentioned in Domesday Book as being then in existence, and it is probable that those belonging to monasteries were not included.—*Birmingham Post.*

COMMONS PRESERVATION SOCIETY.—A meeting of the Executive Committee of the Commons Preservation Society was held at 1, Great College-street, Westminster, on Monday, under the presidency of the Right Hon. G. Shaw-Lefevre. It was reported that forty-eight Bills coming within the sphere of the Society's operations had been introduced into Parliament during the current Session, and that satisfactory arrangements had now been made with the promoters of a number of the Bills under which power was sought to compulsorily acquire common lands and open spaces or to extinguish rights-of-way. Amongst other Bills to which clauses had been added at the instance of the Society was that promoted by the Great Western Railway, which had now agreed to give an equivalent area of land for the portions of Langport Common Moor, Somerset, and Roborough Down, Devon, to be extinguished. The Uxbridge and Rickmansworth Railway also agreed to add an equivalent in respect of Ickenham Green, Middlesex, of which six acres were within the limits of deviation of their proposed works. The Burley-in-Wharfedale Urban District Council had reduced the area of land to be absorbed on Burley Moor from 33 acres to 16 acres; and they would only enclose the land with an open iron railing, so that the public might have access to all parts of the common, and in deference to the Society's representations the Menstone Waterworks Company had agreed not to interfere with any common rights over their contemplated gathering ground on Burley Moor. It was further reported that the objectionable features of the Woking Water and Gas Bill, so far as they affected the scenery of the Tillingbourne Valley, had now been removed, and that an instruction to Committee moved by Mr. J. M. Paulton, M.P., for the Society had been adopted by the House of Commons on the second reading of the East London Water Bill, with a view to making compulsory the substitution of a suitable area of open space for the 194 acres of common land at Waltham and Chingford to be absorbed for the proposed new reservoirs.—Sir Charles Dilke agreed to move on the third reading of the Bradford Tramways and Improvement Bill an instruction to the Committee to strike out of the Bill the provisions under which 50 acres of Baildon Moor would be transferred to the Lord of the Manor as part compensation for his interest in the remainder of the Moor. It was further agreed to oppose on third reading the London, Brighton, and South-Coast Railway Bill, as, in the opinion of the Society, the land proposed to be given in exchange for 2 acres of Earlswood Common, Redhill, was unsatisfactory. Correspondence with the Office of Woods and Forests with respect to the suggested Bill to authorise the alienation of 250 acres of land in the New Forest, was considered. The Society expressed its disapproval of the Bill in its present form and made alternative proposals to the Department. The action of the Crown with respect to the depasturage of sheep and the sale of land in the Forest of Dean was considered, and a further report on the matter was ordered to be drawn up. It was stated that apart from its various County Committees, the Commons Preservation Society was dealing with over twenty cases of interference with common land and open spaces, and with upwards of fifteen cases of enclosure of roadside waste or obstruction of rights-of-way in various parts of the country.

DESTRUCTION OF MARTELLO TOWERS.—The Martello Towers on the Kentish coast, erected as part of the Duke of Wellington's scheme for the protection of southern England against Napoleon's threatened invasion, are gradually disappearing. It has now been decided to have two of these towers near Hythe blown up by the Royal Engineers. One is the tower split during the recent gales by the sea scouring out the foundations, and the other is near the Grand Redoubt.—*Morning Post.*

CAPITAL AND LABOUR.

THE HULL BUILDING TRADE DISPUTE.—The dispute in the Hull building trade has culminated in a strike of carpenters and joiners. It is stated that one of the master builders has conceded the advance demanded, and taken several men in to work. Some members of the Carpenters' and Joiners' Association have left the town for work elsewhere.

LEGAL.

PUTNEY LIGHT AND AIR DISPUTE.

MR. JUSTICE NORTH, in the Chancery Division on the 24th ult., had before him the case of Ayling *v.* Clements and Others, on a motion by Messrs. Edward Ayling & Sons, boat-builders, of Putney, for an *interim* injunction restraining the defendants, their servants, contractors, or workmen until the trial of the action from building or erecting upon the defendants' land, formerly known as White House, Riverside, Putney, adjoining the plaintiffs' property, a boathouse, in such a manner as to obstruct the free access of light and air to the windows and ventilators of the plaintiffs' premises.

Mr. H. Terrell, Q.C., in opening the case for the plaintiffs, said that the defendant Clements, since the notice of motion, sold his interest in the property to the defendant Aldis, and there would be no order against Clements except that the costs would be costs in the action. The other defendant besides Aldis was Hirst, the builder. The plaintiffs' property included a boathouse and workshop, and consisted of two stories—the ground floor being used as a storeroom for boats and the first floor being used as the workshop. The building was originally built in 1859, when it had on its western side a sloping roof with three skylights, and it had also on the first floor facing the tow-path three windows. At that time Messrs. Simmons, the boat builders, were in occupation. In 1882 they sold the property, together with certain adjoining property, to Messrs. Alexander. In that year Messrs. Alexander rebuilt the boathouse, raised the height somewhat, and advanced the front of the house nearer towards the towpath. In the place of the three skylights on the western slope of the roof they opened six skylights and the new roof was put a few feet higher than the old one. The light derived from the three old skylights was preserved in three of the new skylights. In 1895 Messrs. Alexander sold the premises to a Mr. Stewart, who in 1897 sold them to the plaintiff. On June 9, 1898, the defendant Clements, who had acquired the adjoining property, entered into a building agreement with Mr. Hirst, under which the latter was to build, on what was formerly a garden, some residential flats. On August 17 the defendants' architects served upon the plaintiffs a party-wall notice, by which they claimed that the western wall of the plaintiffs' premises was a party wall.

Mr. Macnaghton, Q.C., for Mr. Hirst, said he did not now suggest that this was a party wall. He withdrew that altogether now.

Mr. Terrell, continuing, said that discussions and interviews followed, and the defendants were allowed to build a dwarf wall. The plaintiff, however, subsequently found that the defendants had built rather more than a dwarf wall, and a heated interview followed, in which each party charged the other with breach of faith. The defendants had built this wall, which entirely blocked up the plaintiffs' ventilators and interfered with the light to the skylights.

In the result, his Lordship was of opinion that, although there was an infringement of the plaintiffs' new windows, they did not coincide with the position of the old ones, and, therefore, the new ones not being ancient lights, he refused the application.

THE ANCIENT LIGHT DISPUTE AT KNIGHTSBRIDGE.

THE case of Geeks *v.* Kellett, which was reported in the *Builder* of the 18th ult., was again mentioned to Mr. Justice Byrne, in the Chancery Division of the High Court of Justice, on the 24th ult. It will be remembered that the plaintiff applied, on the 10th ult., on motion for an *interim* injunction till the trial or further order restraining the defendant from the alleged interference with his ancient lights at Nos. 33, 34, 35, and 36, Albert Gate, Knightsbridge, of which premises the plaintiff is the freeholder, and the case was then ordered to stand over to give the defendant an opportunity of answering the affidavits filed by the plaintiff.

Mr. Farwell, Q.C. (who appeared with Mr. Rowden for the plaintiff) now stated that the parties had arranged their differences, and there would be a taxation of costs as between solicitor and client.

Order accordingly.

ABBEY MANSIONS.

PROBABLY the end of the long litigation *re* Abbey Mansions (Orchard-street, Westminster), was reached before Mr. Marsham (at the Westminster police-court on the 28th ult.), who delivered a judgment of a very technical nature on the County Council summonses against the builder. His worship held that a limitation of time estopped the County Council from taking proceedings for the reduction of the height of the building. All the dangerous structure summonses which the County Council had taken out were withdrawn, but as they succeeded in the arbitration under this head he allowed them sixty guineas costs. Mr. Marsham said that the buildings were no doubt all right now, but they were not at all satisfactory at first.—*Morning Advertiser.*

IMPORTANT CLAIM AGAINST BUILDERS UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE hearing of the case of Hoddinott *v.* Newton Chambers, & Co., Limited, was concluded in the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 25th ult., on an appeal by the defendants from the decision of Mr. Lushington, the Judge of the Wandsworth County Court, on an application for compensation under the Workmen's Compensation Act, 1897. The plaintiff or claimant was the widow of a deceased workman, who at the time of his death was in the employment of the appellants. It appeared that a stable had been built for the London General Omnibus Company about six months before the time of the accident, and was occupied by the company. After it was so occupied the company's engineer, considering it necessary to strengthen the structure by putting in iron stays to prevent vibration, the appellants were employed to put in stays to fasten together the columns and girders of the stable. To do this three planks were placed on two trestles about 8 ft. from the ground, and the workmen stood on the planks whilst at work. These trestles and planks were removed each night on account of the horses in the stable. At the time of the accident the deceased man was standing on the planks engaged in assisting to

raise up one of the iron stays when he overbalanced himself, fell off, and was killed. Two questions were raised (1) whether the building was over 30 ft. in height, and (2) whether it was being "constructed or repaired by means of a scaffolding" within Section 7, Sub-section 1 of the Workmen's Compensation Act, 1897. The height from the ground to the parapet of the building was 28 ft., and from the ground to the top of the roof the height was 36 ft. The appellants contended that, inasmuch as nothing was being done to the roof, the height of the building must be taken, as in Section 5 of the London Building Act, 1894, from the ground to the top of the parapet. They also contended that the building, if over 30 ft. in height, was not being "constructed or repaired by means of a scaffolding," the work consisting of alterations to the building, and not repairs, and that the arrangement of the planks and trestles was not a "scaffolding." Mr. Lushington decided both the questions in favour of the claimant and awarded her 245*l.* 14s. as compensation. The claimant had brought an action under the Employers' Liability Act, 1880, to recover damages, alleging that the planks and trestles were defective, but Mr. Lushington gave judgment for the appellants in that action, and then upon the application of the claimant the Judge proceeded under Section 1, Sub-section 4 of the Act of 1897 to settle the question of compensation under that Act. The Judge, however, deducted from the compensation awarded under that Act the costs of the witnesses called by the appellants in the action under the Employers' Liability Act, 1880. The employers now appealed.

At the conclusion of the arguments of counsel, Lord Justice Smith, in giving judgment, said that as the building was shown to be more than 30 ft. in height up to the top of the roof, in his opinion the applicant had made out that the building exceeded 30 ft. in height within the meaning of the Act. With regard to the question whether the planks and trestles constituted a scaffolding, the County Court Judge had found that they did; and, in his opinion, it could not be said that there was no evidence of a scaffolding having been used. Speaking for himself he thought it was immaterial whether that which was alleged to be a scaffolding was inside or outside a building. Neither did he think that the scaffolding need be 30 ft. high, as the Act did not say so. Passing on to the question whether the deceased man was employed by the undertakers on a building which was being either constructed or repaired by means of a scaffolding, his Lordship said that "undertakers" were defined in Sub-section 2 of Section 7, and were stated to be in the case of a building the persons undertaking the construction, repair, or demolition. In the present case the building was already completed, and was in actual use; and after it was completed, something which was not in the original design was found to be necessary in order to strengthen it. Thereupon ironmasters were called in to put in girders for this purpose. In his opinion, it was impossible to say that this was employment by the ironmasters on a building which was being constructed. Then, was this a case of repairing a building? In his opinion it was not. Nothing was out of repair; the building was a new building which wanted something additional in order to strengthen the roof; putting in that something additional was not repairing. He thought that the claim failed on the ground that this was not a case of employment on a building which was being constructed or repaired. In his opinion the appeal must, therefore, be allowed.

Lords Justices Collins and Romer concurred, and the appeal was accordingly allowed.

Mr. R. M. Bray, Q.C., and Mr. Spencer Bower appeared for the appellants, and Mr. Ruegg, Q.C., and Mr. Moyses for the respondent.

ACTION BY CONTRACTORS.

THE case of Braithwaite *v.* the Urban District Council of Ilkley came before the Court of Appeal on the 28th ult., on the appeal of the plaintiffs from an order of Mr. Justice Ridley staying all proceedings in the action under Section 4 of the Arbitration Act, on the ground that the subject matter of the action was matter for arbitration.

It appeared that the plaintiffs were contractors at Leeds who had entered into a contract with the defendants to construct certain sewerage works. One of the conditions in the contract was that if at any time after the works were completed any dispute or difference should arise between the Council and the contractor, the same should be referred to the engineers, whose decision and award should be final and binding. Another clause in the contract stated that the engineers referred to should be Messrs. John Warr & Mallinson, of Leeds, or other the engineer for the time being of the Council or their deputy duly appointed. There was also a proviso for getting a special form of arbitration if the contractors were dissatisfied with the engineers' award. The plaintiffs, in constructing the sewers, came upon a number of large boulders which were common in that district, and through which they had either to tunnel or blast. They claimed that this excavation should be paid for as "rock excavation" under the terms of the contract at a higher rate. Mr. Warr, the engineer, said that this was not rock excavation, and refused to certify for it as such. The plaintiffs thereupon brought the present action to obtain the amount they claimed to be due. It appeared that after the contract had been entered into the firm of John Warr & Mallinson dissolved partnership, no notice being served upon the contractors. When the dispute arose the Urban District Council wished to refer the matter to the arbitration of Mr. Warr, but the plaintiffs said that the firm of Warr & Mallinson were the sole arbitrators appointed under the contract, and they declined to accept Mr. Warr as arbitrator, he having already expressed an emphatic and decided opinion against the plaintiffs on the subject matter in dispute between the parties.

In the result both parties consented that there should be an open reference to a gentleman to be named by the President of the Bradford Arbitration Surveyors' Society, all the costs being in the discretion of the arbitrator.

Order accordingly.

Mr. C. A. Russell, Q.C., and Mr. R. C. Glen appeared for the plaintiffs; and Mr. T. Willes-Chitty for the defendants.

MEETINGS.

MONDAY, APRIL 3.

Liverpool Architectural Society.—Mr. J. F. Doyle on "The New Royal Insurance Buildings."

TUESDAY, APRIL 4.

Glasgow Architectural Association.—Mr. John Arthur on "Estate Feuing Plans and their Preparation."

Perth Architectural Association.—Mr. C. J. Menart on "Ecclesiastical Architecture of the Middle Ages." 8 p.m.

WEDNESDAY, APRIL 5.

Royal Archæological Institute.—(1) Mr. J. Lewis André, F.S.A., on "Ritualistic Ecclesiology of North-East Somerset." (2) Mr. J. P. Harrison, M.A., on "Influence of Eastern Art on Western Architecture in the Eleventh Century." 4 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of Members. 8 p.m.

British Archæological Association.—Dr. Fryer, M.A., on "Ancient Fonts in Gower." 8 p.m.

Edinburgh Architectural Association.—8 p.m.

SATURDAY, APRIL 8.

Edinburgh Architectural Association.—Visit to Woodhouselee.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until May 22.

[1898] 1,188, Cameron, Commin, & Martin, Generation of Gas for Lighting, Heating, and power purposes from Sewage, &c.; and Sewage-purification Tanks. 3,591, Day & Lavigne, Turret Lathes. 6,442, Walther; and 8,685, Lathams, Disinfectants and their Application. 6,849, Roberts, Collapsible Centre for supporting Arches. 6,876, Reid, Strainer or Drainer for Sinks. 7,080, Nesbitt, Gas-generators. 7,838, de Szepczynski; and 8,675, Graetz, Generation of Acetylene Gas. 7,895, Barton, Fusible Cut-out. 8,918, Doré, Bricks and Tiles. 9,182, Millican, Timber-sawing. 9,745 Penman, Supply of Gas to Buildings. 10,056, Saxl, Controlling Apparatus for Acetylene Generators. 10,471, Purvis, Filtration of Sewage or Impure Waters. 10,618, Pillinger, Indicating and Recording Apparatus for Electrical Meters. 10,639, Homer, Solder. 10,734, Place, Combined Gulley and Ventilator. 10,750, Brodie, Collection and Removal of House Refuse. 10,846, Farrow, Paper Hangings and Wall Coverings. 11,008, Strauss, Lathing for Fire-proof Walls, Ceilings, &c. 11,013, Collins, Knobs and Handles for Mortise and Rim Locks, &c. 11,094, Kinniburgh & Barr, Adjustable Holder for Paint, Whitewash, and other Brushes. 11,302, Brier, Electrical Switches. 11,325, Stocks, Combined Rib and Coal Saver for Fire-ranges. 11,498, Gover & Proctor, Holders for Electrical Glow-lamps. 12,100, Hodges & Lilley, Floor Spring-Hinges for Swing-Doors. 12,678, Schlickeysen, Combined Clay Sump or Pug-Mill Mixer and Brick Press, for Pressing Bricks, Slabs, Pipes, Tiles, &c., and for Mixing Mortar, Concrete, &c. 13,312, Michaelson; and 26,789, Allgemeine Elektricitäts G., Electrical Incandescent Lamps. 14,399, Blackburn & Spence, Electrical Measuring Instruments. 16,974, Twyford, Sinks, Lavatory Basins, Slop Hoppers, &c. 18,187, Crossingham & Hobbs, Circular-saw Guards. 19,775, Howson, Lavatories, Sinks, Baths, Wash Tubs, &c. 22,879 and 23,162, Relf & Westlake, Rock-boring Machines and Tools or Bits therefor. 24,071, McCall's Sliding Hinge Window Company & McCall, Windows. 25,769, Maschinenbau A. G. Nürnberg, Suspension Bridges. [1899] 1,093, Harris, Fire-escapes. 1,329, Lebioda, Hardening Wood. 1,530, Mercer, Safety and Time-Saving Devices for use in Window Cleaning and Glazing. 2,762, Kahnweiler, Bath Accessory. 3,054, Bremer, Hollow Concrete Floors, Walls, &c. 3,205, Saunders, Bricks, Tiles, Slabs, &c. 3,246, Von Hosstrup, Flushing Cisterns. 3,362, Rogers, Automatical Combined Emergency Air Float, Valve, and Trap. 3,658, Deichsel, Wire Fencing and Analogous Structures.

ABSTRACTS OF PATENTED INVENTIONS.

26,834.—GAS BURNERS: *T. Fletcher & Fletcher, Russell & Co.*—For an atmospherical gas burner, and to prevent lighting-back and choking of the burner, a perforated or metallic gauze partition is placed between the mixing-tube and the outlets, the sum of the areas of the outlets and the sum of the areas of the openings in the partition being, each of them, equal to the cross-sectional area of the mixing-tube.

26,886.—INSPECTION OPENINGS, AND GULLY TRAPS: *Albion Clay Co. & A. W. Bird.*—A pan, which has a short length of pipe leading to a trap, is fixed at the bottom of the gulley or opening, and the inlet drains discharge through the pipe, the outlet has an opening, for cleaning purposes, the opening being carried up to the ground level by pipe-lengths.

26 929. — PENS FOR USE BY DRAUGHTSMEN AND OTHERS: *A. H. Garot.*—The nibs are carried in a cone which fits upon the end of the handle, and the similarly shaped handle-end is pressed against the outer cone by means of pins and a helical slot when the handle and cylinder are turned relatively to one another in order to adjust the distance between the nibs; a dotting wheel can be pivotted between the nibs, and ink may be supplied from within the handle.

26,995.—SHANKS AND SHAFTS OF ROTATING TOOLS: *J. Schluch & J. Fober.*—The engagement of pins with either the right or the left-handed threads in the sleeve or handle serves to rotate the shank or shaft of screw-drivers, drills, and similar tools, the pins are pivotted to a sleeve around the tapered end of the central shank, whilst cross-pins which engage in slots in the sleeve, prevent rotation in certain positions; the pins may be removed from one set to another set of grooves by pulling the shank until they enter holes in a loose washer, and by then turning the shank.

27,065.—ACETYLENE GENERATORS: *J. Benjamin.*—The perforated carbide holders are placed within generating cylinders contained in water-jackets mounted upon the tank of a gas-holder; on the cock of the water-pipe which supplies each generator is fitted a toothed sector to gear with pins upon a rod attached to the bell and guided by a grooved tube, so that the bell's motion will regulate the supply of water to the carbide; the produced gas passes into the bell through a well and a pipe rising therefrom, and out of the bell by a pipe that descends into another well, which communicates with the service pipe; by a pivotted lever arrangement two generators can be brought into alternate operation.

27,094.—WATER WASTE PREVENTERS AND KINDRED APPLIANCES: *J. Shanks.*—For the prevention of noise an air pipe is fixed from the crown of the siphon to the bottom of the tank, and its end is there upturned to form a seal; the basin is curved to fit the body of the user; the hinged closet-seat is composed of a thin sheet of metal, faced upon both surfaces with vulcanite or similar non-conducting material, and so perforated that the two surfaces can be moulded together; the flushing rim has two series of flushing apertures, whereby jets are directed down the sides and towards the outlet. To maintain the level in the basin an auxiliary cistern is fitted with a ball-cock; and in order that the supply cock of the flushing cistern may work with a small up and down motion of the float, the float lever is pivotted in a bracket and joined by a pin and slot joint to the arm of a cam that operates the plug valve.

27,104.—SLABS FOR FLOORS: *H. Eichler.*—The slabs are composed of sawdust, quartz, and ground lime, pressed in moulds; the upper layer of sawdust may be dyed with tan-liquor, or each slab's upper surface may have a design thereon, made of saw-dust dyed with mahogany-liquor.

27,121.—FILTERING MEDIA: *W. Leuscher.*—For use as a filtering medium or absorbent the inventor adopts a mixture of clay, asbestos, coal, flour, sawdust, &c., formed into a plastic mass, and then dried and burnt; the burning process is dispensed with if lime or cement has been mixed with the asbestos.

27,228.—SELF-CLOSING VALVES AND COCKS: *J. Merrill.*—For a water-tap, a hollow bib, with openings for the pascage of water, is attached to the valve, and is raised from its seal by a lever, or otherwise; when the bib is released, water presses the valve against its seat; into the valve casing is screwed a sleeve in which the bib slides.

27,232.—BRAKES FOR WINCHES: *R. Petrick & C. Wohlfahrt.*—The band-brakes are connected to pivotted levers; the lifting-rope passes over a roller mounted at the end of the levers and between two other rollers, whereof one is forced inwards by the rope's tension, which operates against a spring behind the roller; thus the inclination of the rope between the two sets of rollers depends upon the weight of the load, and the more vertical it becomes, the greater is the ratio between the brake power and the lifting power.

27,261.—MANHOLE DOORS AND FRAMES, AND GRATINGS.—A spanner-shaped lever, pivotted to a lug and engaging with a projection, holds down the cover or grating; for unlocking and raising the cover, a hook is inserted underneath the lever's free end, and as the projection becomes disengaged the nose of the lever acts as a fulcrum which enables the lever to raise the cover.

27,397.—GULLEY TRAPS: *J. Johnson, S. Johnson, & E. Jones.*—The silt-box rests upon projections which are placed lower than the water-line but above the seal, the water passes through a vertical opening protected by bars into a passage which is formed in the side of the gulley, and so to the seal. Should the grating become stopped the water is diverted to beneath a ledge and so through another opening into the trap.

27,430.- SAWING AND PLANING WOOD: *G. Cameron.*—The contrivance, which is particularly applicable for use in shipyards and other outdoor works, consists of a portable support for sawing, rabbeting, planing, and similar machinery; to a trolley is fixed a cast-iron base-plate, whereon is mounted a revolvable plate that can be clamped at any angle by hand-screws which work in concentrical grooves, rotary planing cutters, or a circular saw, driven directly by an electro-motor, can be fixed upon the base-plate.

27,483.—ELECTRIC ARC LAMPS AND GLOBES: *P. Spies, W. H. Newall, & A. W. Shout.*—Two flat plates, hinged endwise, form a clutch for the upper carbon which passes freely through a hole in the abutting ends of the plates, whilst the outer ends are linked to a tube attached to the core of a solenoid; the raising of the core lifts the outer ends of the plates in order that they may grip and raise the upper carbon; feeding ensues when the hinge is lowered to the base-plate; copper springs, attached to the tube (of the core) and bearing against the lamp-frame and the carbon, maintain electrical connexion with the upper carbon; an insulated plate, resting upon thin rods below another plate, carries the lower carbon, the plates having circular channels which contain a ring of small glass tubes around the arc.

27,499.—SASH FASTENINGS AND LATCHES: *A. Hodgson-Brown.*—To one sash is secured a plate on which moves freely a ring with a hooked stem which engages with a button upon the other sash; a flanged disc, mounted eccentrically upon the former sash by means of a shouldered pin, governs the motion of the stem and ring.

27,566.—LIFT VALVES AND SPINDLES: *J. Whitfield.*—In order to prevent leakage in a high-pressure water-cock, the water is made to press upon a conical or cup-shaped washer or valve, made of some yielding material which is laid between flanges formed upon the spindle.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 16.—By VENTOM, BULL, & COOPER.

Kilburn.—Willesden-lane, f.g.r. 22*l.*, reversion in 84 yrs. £600

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Boys School	St. Thomas Sch. Bd. Exeter	.....	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Alterations to Northgate School	Gt. Yarmouth Sch. Bd.	Bottle & Olley, Archt. Queen-st. Great Yarmouth	April 4
Broken Granite (10,000 tons)	Cannock (Staffs.) R.D.C.	H. M. Whitehead, Dist. Surv. Brewood, Stafford	do.
Underground Convenience	Fleetwood (Lancs.) U.D.C.	J. Todsley, Town Hall, Fleetwood	do.
Alterations to Parish Church, Clifton, Cumberland		J. Howes, Archt. Workington	do.
Bridge, Needham	Norfolk & East Suffolk C.C.	H. Miller, County Surv. 16, Museum-st. Ipswich	do.
Sewerage Works	Halesowen R.D.C.	W. Fiddian, Surv. Town Hall, Stourbridge	do.
Sewerage Works, North-road	Egremont U.D.C.	J. Bowly, Town Hall	do.
Surveyor's Materials	Newburn-on-Tyne U.D.C.	T. Gregory, Surv. Newburn-on-Tyne	do.
Road Materials	Bromley U.D.C.	Council Offices	do.
*Wrought Iron Fencing	Watford U.D.C.	D. Waterhouse, 14, High-st. Watford, Herts.	April 5
Construction of Road	Southend Corp	A. Fidler, C.E. Southend	do.
Alterations to R.C. Schools, Egremont		J. S. Stout, Archt. Gillfoot, Egremont	do.
Two River Walls, Hull	N. E. Ry. Co.	T. M. Newell, Engr. Dock Offices, Hull	do.
Rope Factory, &c. Bath-rd. Bristol	Terrell & Sons	H. Williams, Archt 24, Clare-st. Bristol	do.
Girder Bridge, Pandy		R. L. Bamford, Surv. Widemarsh-st Hereford	do.
Water Supply Works	Thrapston R.D.C.	T. Lloyd, Halford-street, Thrapston	do.
Stoneware Pipes	Birmingham Corp.	J. Knight, Engr. Council House, Birmingham	do.
Road Materials	Houghton-le-Spring R.D.C.	D. Balfour, C.E. Houghton-le-Spring R.S.O.	do.
Making Gladston-road	Barry (Glam.) U.D.C.	J.C Pardoe, C.E. 60, Holton-rd. Barry Docks	do.
Paving Works	Middleton (Lancs.) Corp.	W. Welburn, Boro Surv. Town Hall	do.
C.I. Pipes	Exeter T.C.	D. Cameron, Surv. 18, Bedford-circus, Exeter	do.
Stoneware Pipes	Hove T.C.	H. H Scott, Boro. Surv. Town Hall	do.
*Water Mains, Outside Hydrants, &c. at Hospital	Metropolitan Asy. Bd.	Norfolk House, Norfolk-st. Strand	April 6
Iron Foundry, Albert-rd. Halifax		Jackson & Fox, Archt. 7, Rawson-st. Halifax	do.
Supplying and Laying C.I. Main, Guildford-rd.	Farnham Water Co.	G. McDonald, 104, West-st. Farnham	do.
Business Premises, Usbaw Moor, Durham		J. W. Taylor, Archt. Newcastle-on-Tyne	April 7
Sewerage Works	Andover T.C.	A. Purkess, Boro. Surv. Andover	do.
Road Works	Stamford U.S.A.	T. J. Ward, Surv. Stamford	do.
Steel Girders, &c.	Wolverhampton Corp.	J. W. Bradley, C.E. Town Hall	April 8
Villa, Cornelly, Wales	Mrs. Jenkins	P. J. Jones, Archt. Bridgend	April 10
*10-ton Steam Road Roller	Cty. Boro. West Ham	Lewis Angell, Town Hall, Stratford	April 11
Six Cottages, Helsby Station, Cheshire	L. & N.W. and G.W. Ry. Cos.	A. E. Bolter, Paddington Station, W.	do.
*Road-making at Southwold	Coast Development Co Ltd.	H. Miller, 16, Museum-st. Ipswich	April 12
*Sinking Well	Greenwich Union	T. Dinwiddy, 12, Croom's Hill, Greenwich, S.E.	do.
*Yorks. Paving, Granite Kerb, &c.	Strand Dist. B. of W.	5, Tavistock-st. W.C.	do.
*Baltic Hemp, Carpenter's, &c. Work, Iron Plate Wares, Lamps, &c.	Admiralty	Director Navy Contracts, Admiralty, S.W.	April 13
Rebuilding Forester's Arms Inn, Gateshead	R. Newton	A. G. Kyle, Archt 145, Pilgrim-st. Newcastle-on-Tyne	do

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tender to be delivered.
Sea Defence Wall, Heswall, Cheshire		C. W. Oates, Dee View-rd. Heswall	April 15
*Asphalt Kerb, York Paving, Granite, &c.	Bermondsey Vestry	F. Sumner, Town Hall, Spa-rd. S.E.	April 17
*Buoy Store, &c. at Trinity House, Penzance	Trinity House Corp.	Trinity House, London, E.C.	do.
Stables, Cardiff	G. W. Ry. Co.	G. K. Mills, Paddington Station, W.	April 18
*Stone Paving	Tottenham U.D.C.	P. E. Murphy, 712, High-rd. Tottenham	do.
*Iron Arched Roof	Newcastle-on-Tyne Corp.	Town Hall	April 20
*Enlarging School Premises	Weybourne (U.D.) Sch. Bd.	F. Andrews, Offices, Holt, Norfolk	April 27
*Engines, Pumps, &c. for Water Works	Gravesend & Milton Water Works Co.	J. Mansergh, 5, Victoria-st. S.W.	do.
Three Houses, Bow-road, Middlesbrough		J. Ward, 21, Granville-rd Middlesbrough	No date
Seventeen Houses, Stella, Durham		T. C. Nicholson, Archt. Blaydon-on-Tyne	do.
Chapel and Schools, Scotter		J. J. Green, Archt, South John-st. Liverpool	do.
Stores, Lowestoft	Gourock Ropework Co.	F. W. Richards, Archt. Stanley-st. Lowestoft	do
House and Shop, Sefton-rd. Morecambe	Mr. Stutton	Marshall Bros. Archt. Back-crescent, Morecambe	do.
Central Stores, Bridge-st. Wrexham		Morison & Son, Archts. King-st. Wrexham	do.
Church, Elland, Yorks.		R. H. Hall, Archt. 33, Old Queen-st. Westminster	do.
*Painting and Whitewashing	War Dept.	R. E. Office, Mill-lane, Woolwich, S.E.	do
Shop, Cook-lane, Keighley		Judson & Moore, Archts. York-chmbrs. Keighley	do.
Stabling, Long Eaton, Notts.	Co-op. Soc.	W. V. Betts, Archt. Bradford-road, Old Basford, Nottingham	do
Store Premises, Little Moss	Waterloo Indus. Prov. Soc. Ltd.	A. J. Howcroft, Archt. 12, Clegg-st. Oldham	do
Police Station, Prudhoe		J. Crosswell, Archt. Moot Hall, Newcastle-on-Tyne	do.
Seventeen Houses, Cwmaman, Aberdare	Building Club	L. Smith, Archt. 20, Commercial-street, Aberdare	do
Glass Works, Savile Town, Dewsbury		Judson & Moore, Archts. Keighley	do.
Four Houses and House and Shop, Prospect-terrace, Allerton		R. Drake, Archt. 142, Allerton-rd. Allerton	do.
House and Stable, Tamworth-road, Ashby		Mr. Pickthorn, Market-st. Ashby-de-la-Zouch	do
Additions to Business Premises, Leeds-road, Bradford		Empsall & Clarkson, Archts. 7, Exchange, Bradford	do
Presbyterian Church, Felixstowe	Trustees	G. W. Leighton, Archt. Princes-st. Ipswich	do.
Alterations to Inn, Railway-street, Lurgan	V. Harrison	W. J. Moore, Archt. Annst. Belfast	do.
Assembly Hall, Coxhoe, Durham		C. A. Todd, Clarence Villa Hotel, Coxhoe	do.
Villa, Allerton, Yorks.		J. W. C. Atkinson, Archt. 1, Ivegate, Bradford	do.
Additions to College, Harrogate	Rev. J. Haslam	J. M. Fawcett & Son, Archt. Basinghall-st. Leeds	do.
Six Houses, Longsight, Manchester		H. E. & A. Bown, Archts. James-st. Harrogate	do

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Surveyor and Inspector of Nuisances	Kendal Corp.	175*l.* per annum	April 5
*General Engineering Assistant	Birkenhead Corp.	110*l.* rising to 150*l.*	April 7
*Four Divisional Highway Surveyors	West Riding C.C.	250*l.* per annum	April 10
*Clerk of Works	Walthamstow U.D.C.	42*s.* per week	do.
*Architectural Draughtsman (2)	Scarboro. Corp		do.
*Clerk of Works	Tunstall U.D.C.	3*l.* 3*s.* per week	April 12
*Building Inspector	Tottenham U.D.C.	150*l.* per annum	April 17

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p.*** iv. ***Contracts, pp.*** iv. vi. viii. x. & xx. ***Public Appointments, pp.*** xviii. xix. & xx.

Willesden-lane, f.g.r. 52*l.*, reversion in 84 yrs. .. £1,450
Kenilworth-rd., f.g.r. 6*l.*, reversion in 84 yrs. .. 160

By STIMSON & SONS.

Wood Green.—Finsbury-rd., f.g.r. 15*l.*, reversion in 58¾ yrs. 445
Camberwell.—11, 12, and 13, Mazzard-row, f. 1,250
36 to 62 (even), Picton-st., and 2a, Chiswell-st., f. 4,130
Bermondsey.—10 to 18 (even), Cranswick-rd., u.t. 79 yrs., g.r. 25*l.* 1,700
10, Credon-rd., u.t. 79 yrs., g.r. 5*l.* 300
9, Bermondsey-sq., u.t. 15 yrs., g.r. 6*l.* 10*s.*, r. 38*l.* 195
Stepney.—32 to 40 and 50 to 60 (even), Ocean-st., u.t. 8¼ and 6¼ yrs., g.r. 23*l.* 360

By BEADEL, WOOD, & CO.

Blackheath.—Shooter's Hill-rd., f.g.r. 20*l.*, reversion in 38 yrs. 870
Shooter's Hill-rd., f.g.r. 20*l.*, reversion in 44 yrs. 790
Shooter's Hill-rd., f.g.r.'s 144*l.*, reversion in 45 yrs. 5,500
Shooter's Hill-rd., f.g.r.'s 85*l.* 7*s.* 6*d.*, reversion in 48 yrs. 3,190
Woodland's-rd., f.g.r. 20*l.*, reversion in 43 yrs. 1,770
Langton-ter., f.g.r.'s 44*l.*, reversion in 54 yrs. .. 2,350
St. John's Pk., a peppercorn g.r., reversion in 54 yrs. 255
Old Dover-rd., a peppercorn g.r., reversion in 45 yrs. 440
St. John's Pk., f.g.r. 34*l.* (part peppercorn), reversion in 74 yrs. 1,170
St. John's Pk., f.g.r.'s 85*l.*, reversion in 74 yrs. 2,695
St. John's Pk., f.g.r.'s 60*l.* 16*s.*, reversions in 63 and 64 yrs. 2,250
Invicta-road, f.g.r.'s 64*l.* (part peppercorn) reversion in 83 yrs. 1,770
Acorn-ter., f.g.r.'s 56*l.*, reversion in 83 yrs. 1,495
Combe-ter., f.g.r.'s 115*l.*, reversion in 73 yrs. .. 3,490
Denzil-ter., f.g.r.'s 86*l.* 6*s.*, reversion in 71 yrs... 2,545
Humber-rd. East, f.g.r. 8*l.* 8*s.*, (part peppercorn), reversion in 71 yrs. 410
Humber-ter., &c., f.g.r.'s 42*l.* 16*s.* (part peppercorns), reversion in 71 yrs. 1,480
Woolwich-rd., &c., f.g.r.'s. 375*l.* (with several peppercorns), reversions in 71 yrs. 10,760

By WYATT & SON (at Havant).

Havant, Hants.—West-st., &c., two enclosures of building land, 3 a. 3 r. 19 p., f. 1,165

March 17.—By DYER, SON, & HILTON (at Lewisham).

Lewisham.—40 to 46, Brookbank-rd., u.t. 70¾ yrs., g.r. 21*l.*, r. 161*l.* £1,770
19 to 25, 29 to 35 (odd), Ellerdale-st., u.t. 70¾ yrs., g.r. 24*l.*, r. 185*l.* 1,985

By BLAKE & DANNATT.

Bow.—161, Burdett-rd., u.t. 67 yrs., g.r. 6*l.*, r. 43*l.* 4*s.* 325
Stockwell.—3 and 4, Stockwell-st., f., r. 60*l.* 820
Old Kent-rd.—51 to 57 (odd), Bridson-st., u.t. 38 yrs., g.r. 8*l.* 395
Blackheath.—45, St. John's Park, u.t. 67½ yrs., g.r. 8*l.*, r. 50*l.* 430

By PROTHEROE & MORRIS.

Islington.—Warren-st., i.g.r. 65*l.*, u.t. 28½ yrs., g.r. 18*l.* 610
Camden Town.—Arlington-rd., i.g.r. 34*l.*, u.t. 38 yrs., g.r. 13*l.* 9*s.* 250
Camden Park-rd., i.g.r. 14*l.*, u.t. 51 yrs., g.r. nil 260
Regent's Park.—Osnaburgh-st., i.g.r. 27*l.*, u.t. 23½ yrs., g.r. 11*l.* 200

By ROBINSON & SONS.

Shepherd's Bush.—142, 142a, 144, 148, and 150, Goldhawk-rd., u.t. 47½ yrs., g.r. 238*l.*, r. 411*l.*, 2,005

By ROBSON & PERRIN.

Kensal Rise.—69 and 161 Mortimer-rd., u.t. 91½ yrs., g.r. 11*l.* 15*s.*, r. 72*l.* 710

By W. G. SHADRAKE.

Regent-st. — Great Marlborough-st., "The Grapes" p.-h., a freehold rental of 130*l.*, reversion in 36 yrs. 4,025
Theydon Bois, Essex.—Piercing Hill, The Poplars and nearly 4 a., f. 1,950
Piercing Hill, The Chestnuts, f. 750

By STIMSON & SONS.

St. Pancras.—163 and 165, Euston-rd., area 2,350 ft., f., r. 90*l.* 2,750
Seymour-st., &c., f.g.r. 45*l.*, reversion in 28 yrs.. 1,330
Hampden-st., f.g.r. 35*l.*, reversion in 41½ yrs. .. 990
Stibbington-st., f.g.r. 110*l.*, reversion in 41½ yrs. 3,080
Stibbington-st., f.g.r. 110*l.*, reversion in 22¾ yrs. 3,300
Stibbington-st., f.g.r. 27*l.*, reversion in 31½ yrs.. 810

By VENTOM, BULL, & COOPER.

Hampstead.—West End-lane, Crowhurst, u.t. 78 yrs., g.r. 20*l.* 1,750

Rotherhithe.—Rotherhithe-st., "The Noah's Ark" p.-h. and "The Three Compasses" p.-h., f., r. 109*l.* £4,220
Beatson-st., Globe Buildings, f. 715
348, 350, and 352, Rotherhithe-st., f., r. 51*l.* 17*s.* 455
376, 378, 382 to 390, Rotherhithe-st., f. 1,390
Rotherhithe-st., a boat-builder's yard and a timber yard, f., r. 50*l.* 990
Cricklewood.—1, Hillside, u.t. 67 yrs., g.r. 14*l.* .. 1,200

March 18.—By YOUNG & HOWES (a Bath).

Camerton, &c., Somerset.—Woodborough House, also Woodborough and Braysdown farms, 420 a. 3 r. 35 p., f. 46,600

March 20.—By JOHN BOTT & SON.

Herne Hill.—No. 28, also Neckar Lodge, Forth House, Fairmount, and The Lodge, c., r. 420*l.* 7,600

By MOSS & JAMESON.

Norwood.—12, Camden Hill-rd., f., e.r. 45*l.* 490
Brixton.—1, 3, 11, and 19, Ashmere-grove, u.t. 85 yrs., g.r. 32*l.*, r. 145*l.* 1,350

By ALFRED RICHARDS.

Tottenham.—639, High-rd., f. 2,110
81, 83, 95, 97, 99, 101, 123, and 125, Park-lane, with nursery ground and arable land in rear, area about 11 a., f. 4,600
784 and 786, High-rd., f., r. 102*l.* 1,720
Bromley-by-Bow.—12, St. Leonard's-st., f., r. 30*l.* 655
6, Union-st. and 5, Providence-pl., f. 350

By JOHN H. BETHELL.

Upton Park.—24 to 28, The Broadway, f., r. 260*l.* 5,810
9 and 10, The Parade, f., r. 72*l.* 1,210
9 and 11, Plashet-grove, f., r. 65*l.* 950
226, Gipsy-lane, u.t. 79 yrs., g.r., 6*l.*, r. 30*l.* 380
Manor Park.—611, Romford-rd., u.t. 94 yrs., g.r. 8*l.* 8*s.*, r. 40*l.* 405

By MELHUISH & SON (at Paulton).

Hallatrow, Somerset.—A freehold farm, comprising 61 a. 3 r. 24 p. 3,750

March 21.—By DAVID BURNETT & CO.

Walworth.—4 and 6, Orb-st., u.t. 61 yrs., g.r. 16*l.*, r. 83*l.* 12*s.* 760
Sydenham.—Wiverton-rd., a freehold building site 710
Mile End.—18 to 30 (even) ambridge-rd., The Letting of a Building Site, area 6,700 ft., for 90 yrs., at per annum 170

By C. RAWLEY CROSS & Co.

Ealing.—46, Castlebar-rd., u.t. 52 yrs., g.r. 5*l.*, r. 40*l.* £400

Notting Hill.—26 and 30, Tobin-rd.; 1 to 4, Joliffe's-yard; 1 and 2, Thomas'-mews, and a ground rent 7*l.*, u.t. 29 yrs., g.r. 6*l.* 530

By DUNCAN & KIMPTON.

Ealing.—Spring Bridge-rd., c.g.r. 26*l.*, reversion in 40 yrs. 2,105

Norwood. — 32, Hamlet-rd., u.t. 59 yrs., g.r. 6*l.* 10s., r. 50*l.* 400

By GRANT, WHIELDON, & Co.

Lee.—Leylands-rd., i.g.r.'s 190*l.*, u.t. 65 yrs., g.r. 8*l.* 3,102

Eltham-rd., i.g.r. 55*l.*, u.t. 65 yrs., g.r. 5*l.* 1,000

Notting Hill.—51, Lansdowne-rd., u.t. 43 yrs., g.r. 12*l.* 5s., r. 80*l.* 670

By DEBENHAM, TEWSON, & Co.

Piccadilly Circus, &c.—Piccadilly Mansions, u.t. 69 yrs., g.r. 1,520*l.*, e.r. 4,033*l.* 11s. 25,000

Southwark.—163, 165, and 167, Borough High-st., area 6,640 ft., f. 10,000

Mermaid-court, two freehold warehouses, area 2,250 ft. 3,050

Kensington.—16, Young-st., f., r. 120*l.* 3,250

By HEPPER & SONS (at Leeds).

Leeds.—East Parade, The East Parade Chapel Estate, area 1,853 yds., f. 31,000

By W. ROLFE (at Masons' Hall Tavern).

Eastcheap.—Love-lane, "The Cock" p.-h., u.t. 69 yrs., r. 525*l.*, with goodwill 11,000

By WHETHERLY & HASLETT (at Masons' Hall Tavern).

Whitechapel-rd.—"The Nag's Head" p.-h., f., with goodwill 21,510

Southwark.—King's Head Inn Yard, "The King's Head" p.-h., u.t. 71 yrs., r. 150*l.*, with goodwill 5,670

March 22.—By G. PEARCE & SONS.

Islington.—24 and 26, Canonbury-rd., u.t. 19½ yrs., g.r. 13*l.*, r. 85 465

De Beauvoir Town.—148, Southgate-rd., u.t. 23½ yrs., g.r. 4*l.* 545

Barkingside, Essex.—Hainault-rd., a freehold building estate, area 3 a. 0 r. 3 p. 375

By ROGERS, CHAPMAN, & THOMAS.

South Kensington.—15, Thurloe-pl., u.t. 29 yrs., g.r. 10*l.*, r. 110*l.* 950

3, Pelham-cres., u.t. 14 yrs., g.r., &c., 14*l.*, e.r. 110*l.* 525

By GEORGE BILLINGS.

Bow.—68, 69, 71, and 73, Lichfield-rd., u.t. 43 yrs., g.r. 15*l.*, r. 128*l.* 1,390

177, Turner's-rd., u.t. 62½ yrs., g.r. 4*l.*, r. 39*l.* .. 350

By H. DONALDSON & SON.

Haggerston.—1 to 11 (odd), Hay-st., area 2,900 ft., f. 820

Kingsland.—22, Laburnum-st., f., r. 40*l.* 665

Dalston.—147, 151, and 153, Queen's-rd., r. 112*l.*; also l.g.r. 8*l.*, u.t. 20¼ yrs., g.r. 24*l.* 725

By DOUGLAS YOUNG & Co.

Old Kent-rd.—282 to 288 (even), East-st., f., r. 160*l.* 2,000

Clapham.—326, Clapham-rd., f., r. 65*l.* 1,250

4 and 5, Cottage-grove, u.t. 46 yrs., g.r. 9*l.*, r. 65*l.* 475

Somers Town.—26, Clarendon-st., u.t. 30½ yrs., g.r. 15*l.*, r. 52*l.* 180

Marylebone.—12, Charlton-st., u.t. 15 yrs., g.r. 24*l.*, r. 60*l.* 355

5, Barrett-st., f., r. 70*l.* 960

Stoke Newington.—90, Lordship-rd., u.t. 47½ yrs., g.r., 10*l.* 10s., r., 50*l.* 455

Ealing Dean.—288, Uxbridge-rd., u.t. 76 yrs., g r. 8*l.*, r. 30*l.* 320

By J. S. RICHARDSON (at Croydon).

Croydon.—22 and 24, Dryden-rd., u.t. 84 yrs., g.r. 9*l.* 240

By C. & F. RUTLEY (at Croydon).

Whyteleafe, Surrey.—6 to 10, Bournecroft-cottages, u.t. 68 yrs., g.r. 9*l.* 7s. 6d. 600

Whyteleafe-rd., Kenilworth-cottages, f. 570

By DICKINSON & RIGGALL (at Louth).

Louth, Lincs.—"The Wellington Hotel," area 1,950 yds., f. 3,350

March 23.—By FAREBROTHER, ELLIS, & Co.

Bayswater.—Porchester-rd., &c., f.g.r.'s 100*l.*, reversion in about 45 yrs. 6,500

Kildare Gardens, &c., f.g.r.'s 355*l.*, reversion in about 52 yrs. 18,500

By Messrs. CRONK.

Meopham, Kent.—Upper Gooses Farm, 22 a. 2r. 26 p., f. 850

By EDWIN EVANS.

Wandsworth-rd.—F.g.r.'s 33*l.*, reversion in 89 yrs. 850

Battersea.—119, Salcott-rd., u.t. 82¾ yrs., g.r. 6*l.* 10s., r. 34*l.* 315

Chelsea.—30, Cremorne-rd., u.t. 87 yrs., g.r. 14*l.* 920

Clapton.—21 to 24, Blinco-rd., f., r. 104*l.* 1,050

Forest Gate.—331 to 341 (odd), Cann Hall-rd., u.t. 88 yrs., g.r. 27*l.* 815

255, Ramsay-rd., u.t. 88 yrs., g.r. 5*l.*, r. 26*l.* .. 230

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

TO CORRESPONDENTS.

F. G. & Co. (appeared in our last issue).—J. W. B. (amount should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

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PRICES CURRENT OF MATERIALS.

TIMBER.						
Greenheart, B.G.	ton	£8	0	0	0	0 0
Teak, E.I.	load	10	10	0	15	10 0
Sequoia, U.S., ft. cu.		1	9	0	2	0 0
Ash, Canada, load		3	17	6	5	5 0
Birch, do		3	0	0	5	0 0
Elm, do		4	12	6	5	15 0
Fir, Dantsic, &c.		1	10	0	3	10 0
Oak, do		3	5	0	3	15 0
Canada		4	0	0	6	0 0
Pine, Canada red		0	0	0	0	0 0
Do, yellow		4	7	6	6	5 0
Lath, Dantsic, fath.		4	10	0	5	10 0
St. Petersburg		4	0	0	6	10 0
Wainscot, Riga, &c., log		3	15	0	6	5 0
Odessa, crown		3	15	0	6	5 0
Deals, Finland, 2nd and 1st std.	100	9	15	0	10	5 0
Do., 4th and 3rd		9	15	0	10	5 0
Do., Riga		8	5	0	9	5 0
St. Petersburg, 1st yellow		11	15	0	14	5 0
Do., 2nd yellow		10	15	0	12	5 0
Do., white		9	15	0	11	15 0
Swedish		9	15	0	16	15 0
White Sea		10	15	0	18	0 0
Canada Pine, 1st		18	15	0	25	5 0
Do., do., 2nd		13	15	0	17	0 0
Do., do., 3rd, &c.		6	15	0	10	0 0
Do. Spruce, 1st.		8	5	0	10	5 0
Do., do., 3rd and 2nd		7	0	0	8	5 0
New Brunswick		7	0	0	7	15 0
Battens, all kinds		5	0	0	16	0 0
Flooring boards, sq., 1 in., prep., 1st		0	9	0	0	15 3
Do., 2nd		0	7	0	0	12 3
Other qualities		0	5	3	0	6 6
Cedar, Cuba, ft.		0	0	4	0	0 4½
Honduras, &c.		0	0	4	0	0 4½
Mahogany, Cuba		0	0	5½	0	0 7½
St. Domingo, cargo av.		0	0	5	0	1 3
Mexican do., do.		0	0	3½	0	0 4
Tabasco, do., do		0	0	4	0	0 6½
Honduras, do.		0	0	4½	0	0 6
Box, Turkey, ton		6	0	0	15	0 0
Satin, Porto Rico		0	0	9	0	2 0
Walnut, Italian		0	0	3	0	0 7½
METALS.						
IRON—Pig, in Scotland	ton	2	14	8½	0	0 0
Bar, Welsh, in London		6	0	0	6	5 0
Do. do. at works in Wales.....		5	15	0	5	17 6
Do. Staffordshire, in London....		6	5	0	7	10 0
COPPER—British cake and ingot ..		74	0	0	74	10 0
Best selected		74	10	0	75	0 0
Sheets, strong		78	0	0	80	0 0
Chili bars.....		69	7	6	0	0 0
YELLOW METAL	lb.		6½d.			7d.
LEAD—Pig						
Spanish	ton	14	5	0	0	0 0
English Com. Brands		14	10	0	0	0 0
Sheet, English, 6 lbs. per sq. ft. and upwards		15	10	0	0	0 0
Pipe		16	0	0	0	0 0
ZINC—English sheet	ton	30	0	0	0	0 0
Vieille Montagne		31	0	0	0	0 0
Spelter		27	12	6	27	15 0
TIN—Straits		108	5	0	0	0 0
Australian		108	17	6	109	7 6
English Ingots		112	0	0	113	0 0
Banca		0	0	0	0	0 0
Billiton		0	0	0	0	0 0
OILS.						
Linseed	ton	18	0	0	0	0 0
Cocoanut, Cochin		29	10	0	0	0 0
Do. Ceylon		25	15	0	0	0 0
Palm, Lagos		24	10	0	0	0 0
Rapeseed, English, pale		22	15	0	0	0 0
Do. Brown		21	5	0	0	0 0
Cottonseed ref.		16	10	0	17	0 0
Oleine		17	0	0	19	0 0
Lubricating U.S.		0	5	3	0	7 6
Do. Black		0	5	0	0	6 6
TAR—Stockholm.....	barrel	1	6	6	0	0 0
Archangel.....		0	18	0	0	0 0
Turpentine		33	0	0	0	0 0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

CARLISLE.—For additions to Tyneholme, Howard-place, for Mr. F. Robinson. Mr. C. J. Ferguson, architect, 50, English-street, Carlisle. Quantities by the architect:—

Builder.—T. Creighton, Carlisle*	£925 0
Carpenter and Joiner.—J. Hodgson, Carlisle*	372 0
Plumbers.—Graham & Crawford, Carlisle*	139 0
Plasterers.—Ferguson & Son, Carlisle*..	149 10
Slater—J. B. Whitfield, Workington* ..	53 0
Glazier and Painter.—R. S. Kirk, Carlisle*	104 7

LONDON.—For erecting incandescent lamp factory, Tulip-place, Bermondsey, for Messrs. Mackey, Mackey, & Co., Limited. Messrs. Freeman & Dolley, joint architects. Quantities by Mr. C. J. Ford:—

Wilmot & Son....	£2,387 0	W. & H. Castle ..	£2,144 0
John Groves	2,386 0	J. & H. Neale ..	2,136 0
Chessum & Son..	2,370 0	J. Appleby	2,030 0
Akers & Co.	2,294 0	Batley, Son, & Holness	2,027 0
Barrett & Power	2,221 0	R. & E. Evans ..	1,998 0
Cowley & Drake	2,170 0	Stapleton & Sons	1,997 0
Almond & Sons ..	2,156 0		

LONDON.—For fencing portion of site of new Southern Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell & Martin, architects:—

Frank Beadle	£2,690	Taylor & Brooker ..	£2,550
Longley & Sons	2,580	Stenning & Son	2,534
Turner & Son	2,575	J. & S. Agate	2,515
Rowland Bros.....	2,570	Robert Batcheller ..	2,512
Mulford Bros.	2,560	Murray Marshall ..	2,503
Horton & Son (informal)	2,552	E. C. White, Basingstoke*.....	2,494

[Architects' approximate estimate, £2,100.]

KENT COUNTY COUNCIL.—For repairs to main roads, 1899-1900. Mr. F. W. Ruck, County Surveyor, Maidstone:—

WESTERN DIVISION.—Section 1: Dartford. 10 m. 0 f. 12 p.

The Kent Road Co., Gravesend* £2,487 8 4

Section 2: Dartford. 14 m. 7 f. 0 p.

The Kent Road Co., Gravesend* 2,374 2 6

Section 3: Bromley. 9 m. 1 f. 20 p.

The Kent Road Co., Gravesend* 2,291 0 0

Section 4: Bromley. 10 m. 3 f. 0 p.

Peill & Sons, Bromley* 1,609 6 8

Section 5: Wrotham. 10 m. 0 f. 0 p.

Chittenden & Simmons, West Malling* 511 16 8

Section 6: Rochester. 5 m. 0 f. 20 p.

H. T. Bensted, Teynham* 575 10 0

Section 7: Sevenoaks. 12 m. 3 f. 0 p.

P. Bagwell, Sevenoaks Weald* 1,139 4 0

Section 8: Sevenoaks. 13 m. 1 f. 0 p.

T. Wood & Sons, Swanley* 1,191 16 8

Section 9: Sevenoaks. 6 m. 1 f. 0 p.

T. Playfoot, Edenbridge* 863 10 0

Section 10: Tonbridge. 12 m. 4 f. 16 p.

The Kent Road Company, Gravesend* 3,013 16 8

Section 11: Tonbridge. 12 m. 6 f. 12 p.

W. Arnold & Sons, East Peckham* 1,998 5 5

Section 12: Tonbridge. 18 m. 6 f. 16 p.

W. Arnold & Sons, East Peckham* 1,998 5 5

Section 13: Malling. 4 m. 5 f. 20 p.

Chittenden & Simmons, West Malling* 339 13 4

NORTHERN DIVISION.—Section 1: Hoo. 11 m. 3 f.

Tuff & Miskin, Rochester* 1,345 3 0

Section 2: Rochester. 10 m. 6 f. 24 p.

Tuff & Miskin, Rochester* 1,760 10 0

Section 3: Malling. 13 m. 6 f. 34 p.

Chittenden & Simmons, West Malling* 2,063 7 6

Section 4: Malling. 14 m. 4 f. 19 p.

Chittenden & Simmons, West Malling* 1,847 9 2

Section 5: Maidstone. 4 m. 5 f. 20 p.

Ellis & Co., Ltd., Maidstone 651 19 2

Section 6: Hollingbourne. 9 m. 3 f. 0 p.

Tuff & Miskin, Rochester 746 2 6

Section 7: Hollingbourne. 16 m. 2 f. 0 p.

Tuff & Miskin, Rochester* 861 6 8

Section 8: Milton. 7 m. 6 f. 22 p.

Tuff & Miskin, Rochester* 1,010 16 8

Section 9: Milton. 9 m. 5 f. 0 p.

Milton, R. D. C.* 376 6 3

Section 10: Sheppey. 8 m. 6 f. 29 p.

R. Lake, Willington* 813 11 0

Section 11: Faversham. 9 m. 5 f. 31 p.

Tuff & Miskin, Rochester 1,831 5 0

Section 12: Faversham. 11 m. 6 f.

Tuff & Miskin, Rochester* 1,702 2 6

Section 13: West Ashford. 9 m. 5 f. 4 p.

Tuff & Miskin, Rochester* 603 7 6

Section 14: East Ashford. 13 m. 2 f.

East Ashford R.D.C.* 633 6 8

SOUTHERN DIVISION.—Section 1: Maidstone. 14 m. 5 f. 14 p.

Ellis & Co., Ltd., Maidstone* £1,599 10 0

Section 2: Maidstone. 5 m. 1 f. 5 p.

Ellis & Co., Ltd., Maidstone* 901 14 2

Section 3: Maidstone. 10 m. 2 f. 20 p.

Ellis & Co., Ltd., Maidstone* 1,435 9 2

Section 4: Hollingbourne. 18 m. 0 f. 20 p.

Hollingbourne R.D.C.* 1,459 5 0

Section 5: Cranbrook. 15 m. 3 f. 20 p.

Tuff & Miskin, Rochester* 2,126 13 0

Section 6: Cranbrook. 10 m. 4 f. 0 p.

W. Lambert, Horsmonden* 1,333 0 0

Section 7: Cranbrook. 11 m. 6 f. 20 p.

W. Lambert, Horsmonden* 1,199 8 4

Section 8: Tenterden. 9 m. 6 f. 27 p.

Arnold & Sons, East Peckham* 964 12 6

Section 9: Tenterden. 9 m. 3 f. 27 p.

Arnold & Sons, East Peckham* 1,050 10 10

Section 10: Tenterden. 7 m. 6 f. 32 p.

Arnold & Sons, East Peckham* 1,009 2 1

Section 11: West Ashford. 17 m. 0 f. 9 p.

West Ashford R.D.C.* 1,323 7 6

Section 12: East Ashford. 4 m. 2 f. 0 p.

East Ashford R.D.C.* 526 6 8

Section 13: Romney Marsh. 7 m. 2 f. 2 p.

Ellis & Co., Ltd., Maidstone* 699 11 8

Section 14: Romney Marsh. 8 m. 0 f. 0 p.

Ellis & Co., Ltd., Maidstone* 599 10 10

Section 15: Romney Marsh Level. 3 m. 2 f. 0 p.

The Lords, Romney Marsh Level 480 0 0

EASTERN DIVISION.—Section 1: East Ashford. 15 m. 5 f.

Tuff & Miskin, Rochester* £1,462 0 0

Section 2: Blean. 6 m. 0 f. 15 p.

Arnold & Sons, East Peckham* 791 10 10

Section 3: Blean. 11 m. 5 f. 20 p.

The Kent Road Co., Gravesend* .. 1,678 15 0

Section 4: Thanet. 13 m. 7 f. 13 p.

Tuff & Miskin, Rochester* 1,896 0 0

Section 5: Thanet. 7 m. 0 f. 37 p.

Arnold & Sons, East Peckham* 1,295 17 11

Section 6: Bridge. 10 m. 3 f. 0 p.

The Kent Road Co., Gravesend* .. 1,378 5 0

Section 7: Bridge. 15 m. 1 f. 36 p.

The Kent Road Co., Gravesend* .. 1,426 5 0

Section 8: Elham. 13 m. 0 f. 20 p.

Arnold & Sons, East Peckham* 1,113 7 6

Section 9: Elham. 13 m. 2 f. 23 p.

Arnold & Sons, East Peckham* 1,453 4 2

Section 10: Elham. 6 m. 4 f. 17 p.

Knight & Co., Ltd., Sittingbourne* 338 4 2

Section 11: Eastry. 8 m. 5 f. 0 p.

The Kent Road Co., Gravesend* 1,212 18 4

Section 12: Eastry. 11 m. 7 f. 0 p.

The Kent Road Co., Gravesend* 1,690 0 0

Section 13: Dover. 8 m. 4 f. 20 p.

Arnold & Sons, East Peckham* 974 0 10

Section 14: Dover. 9 m. 5 f. 20 p.

Arnold & Sons, East Peckham* 1,710 12 6

Total mileage, 596 m. 0 f. 36 p. Total amount of accepted tenders, 72,369*l.* 12s. 7d. County Surveyor's estimate, 72,348*l.* 18s. 11d. The alternative tenders received for using Guernsey granite in lieu of Cherbourg quartzite would have entailed an extra expenditure of 3,206*l.* 2s. 3d.

[*See also next page.*

LONDON.—For the erection of generating station, &c., in the Town Mead-road, Fulham, for the Fulham Vestry. Mr. F. H. Medhurst, Consulting Engineer, Westminster-chambers, 13, Victoria-street, S.W. Quantities by Mr. Walter Herring, Trafalgar-buildings, Charing Cross, W.C. :—

—	Generating Station.	Additional Foundations.	Disinfecting Station.	Additional Foundations	Transformer Chambers.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Thomas Bendon	20,781 0 0	2,146 0 0	2,854 0 0	190 0 0	834 0 0	26,805 0 0
Clift Ford.....	19,237 0 0	2,065 0 0	2,488 9 0	159 0 0	741 0 0	24,690 0 0
C. G. Hill	18,580 0 0	2,609 0 0	2,359 0 0	215 0 0	752 0 0	24,515 0 0
B. E. Nightingale	18,440 0 0	2,423 0 0	2,473 0 0	224 0 0	795 0 0	24,355 0 0
Spencer, Santo, & Co., Ltd..	18,650 0 0	2,167 0 0	2,479 0 0	176 0 0	782 0 0	24,254 0 0
F. G. Minter*	17,449 0 0	2,232 0 0	2,312 0 0	183 0 0	794 0 0	22,970 0 0
Wilkinson Bros.	17,392 2 9	2,217 6 3	2,262 10 4	169 13 7	713 12 2	22,755 5 1

LONDON.—For building new premises, High-street, Clapham, S.W., for Messrs. T. F. & W. H. Barrett. Mr. Allan Stuart, architect, 61, West Smithfield, E.C. Quantities by Mr. G. T. G. Wright, 3, Great Winchester-street, E.C. :—

Killby & Gayford ..	£9,143	J. Carmichael	£8,387
Woodward & Co. ..	8,957	Edwards & Medway	7,800
Holliday & Greenwood	8,748	George Parker	7,359

Messrs. M. T. Shaw & Co.'s estimate for constructional ironwork, 720*l.*, is not included in the above.

LONDON.—For the erection of shops and flats, Coldharbour-lane, Brixton. Mr. E. C. Homer, architect :—

Minter	£20,375	Chessum & Sons....	£18,990
Grover & Sons	20,364	Nightingale	18,953
Goodson & Sons ..	20,082	Kirk & Randall....	18,840
Patman & Fotheringham	19,757	Killby & Gayford ..	18,836

LONDON.—For the erection of Leighton and Millais buildings—Millbank improvement scheme, for the London County Council :—

Johnson & Co., Lim.	£13,764	Foster & Dicksee ..	£13,198
J. Chessum & Sons	13,452	Holloway Bros.	12,460
Leslie & Co., Lim..	13,238	E. Lawrance & Sons	11,786

MANCHESTER.—For the erection of a technical institute and public library, Stretford-road, Old Trafford, for the Stretford Urban District Council. Mr. J. Bowden, architect, 14, Ridgefield, Manchester :—

Peters & Sons	£6,935	Brown & Son	£6,341
Southern & Sons	6,650	W. Thorpe, Cornbrook, Manchester*	6,159
Samuel Warburton ..	6,585	Bullivant & Sons....	6,065
Wilson & Toft	6,530		

WAKEFIELD.—For additions, &c., to the "Cock and Crown" Hotel, Crofton, for Bentley's Yorkshire Breweries, Limited. Mr. B. W. Higgins, architect, Oulton, near Leeds :—

Builders.—Wainwright & Son, Northgate, Horbury*	£282 0 0
Joiner.—E. J. Spink, Sandal Magna*	281 10 0
Slater.—Wm. Atkinson, 79, Kirkstall-road, Leeds*	58 18 0
Plumbers.—Wilson & Son, Eastfield Works, Castleford*	58 0 0
Plasterer.—John Platts, 21, Providence-street, Wakefield*	71 0 0
Painters.—Roylance & Horsman, 50, St. Mark's-road, Leeds*	21 1 8
	£772 9 8

WOODLESFORD.—For the erection of a store and four cottages, for the Leeds Industrial Co-operative Society, Limited. Mr. W. S. Braithwaite, architect, 6, South Parade, Leeds :—

The whole of the Works.

W. Simpkiss, Swan Junction, Hunslet £1,634

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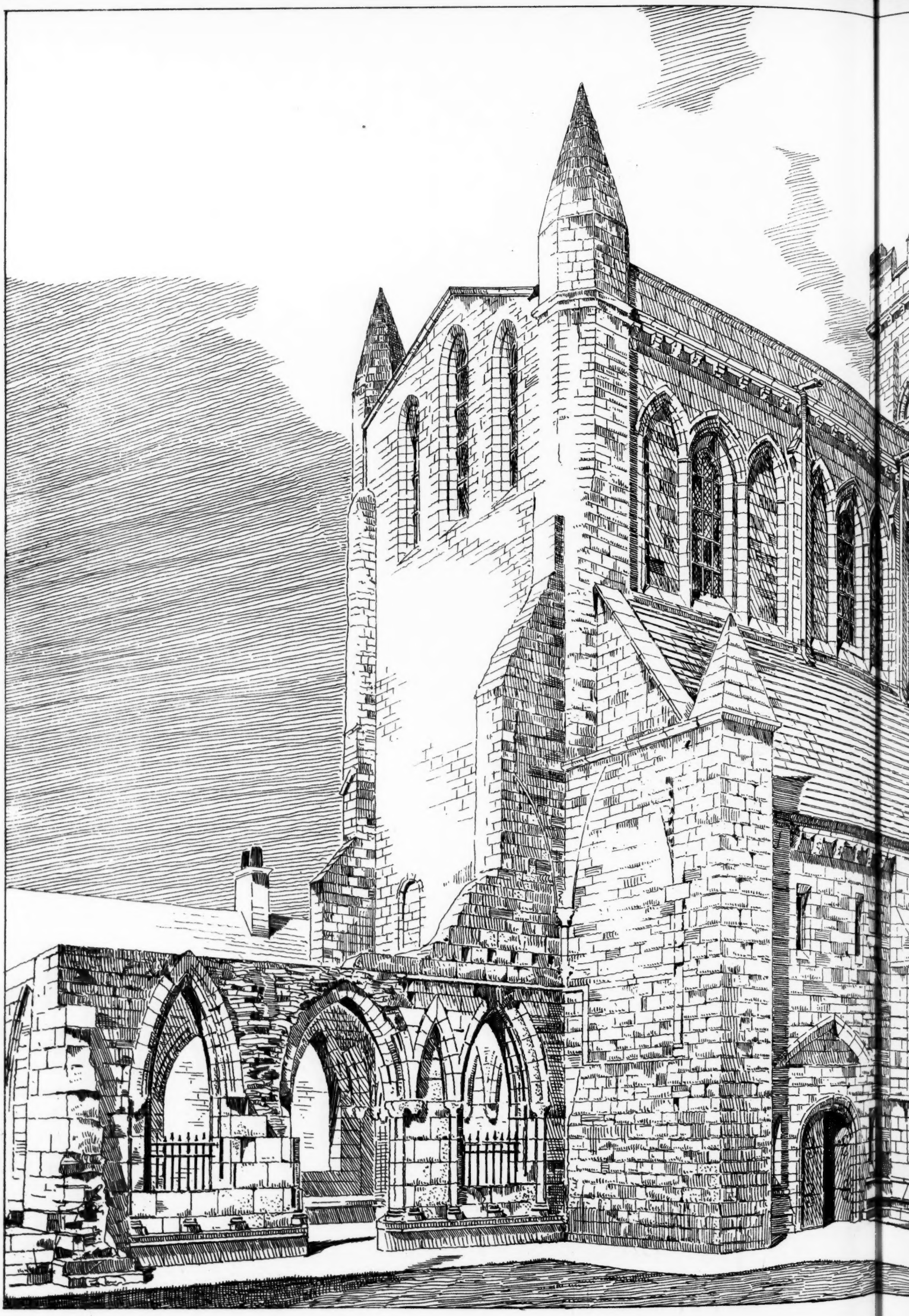

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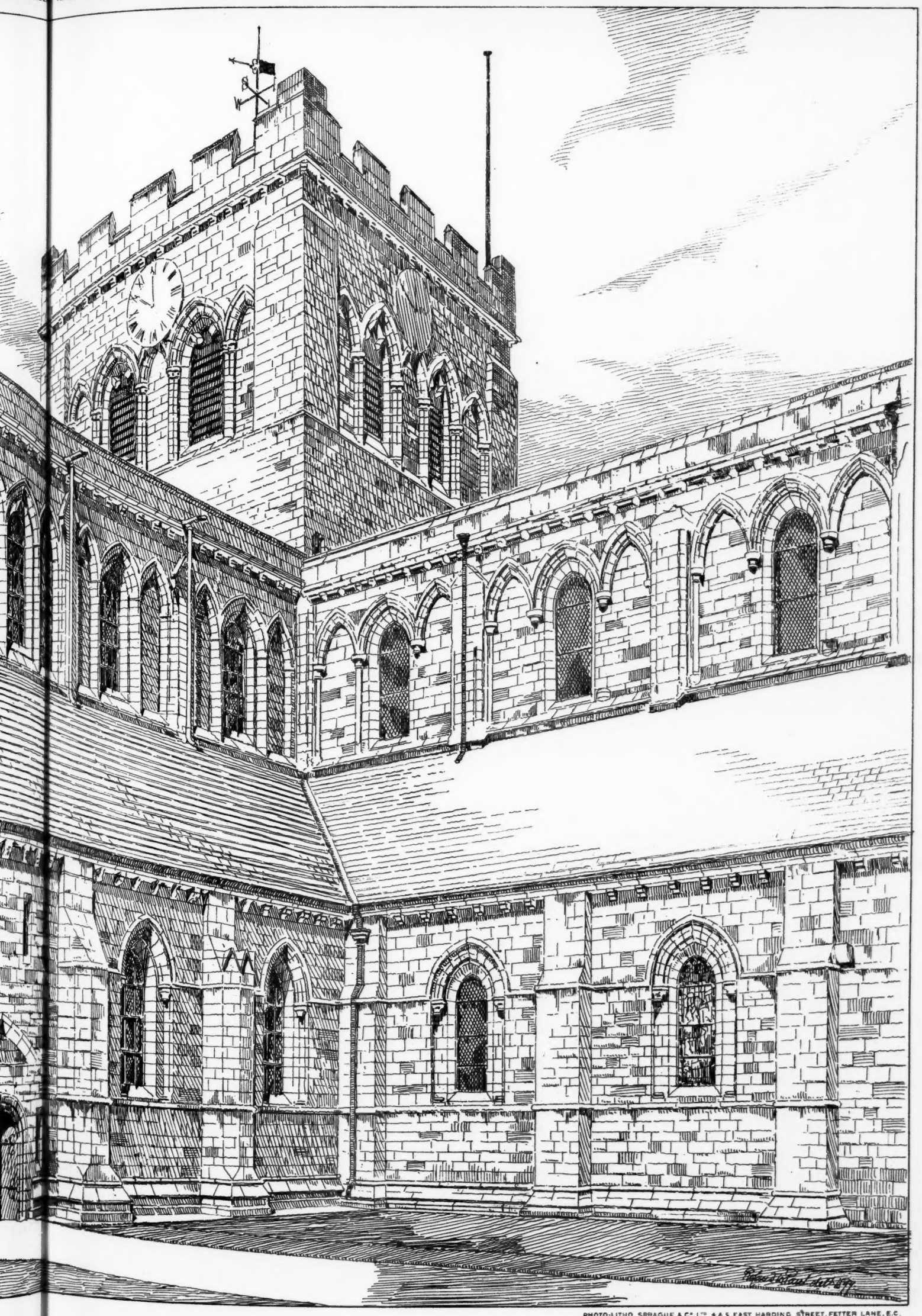

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REAT BRITAIN. No. 29. HEXHAM.

N BY MR. ROLAND W. PAUL

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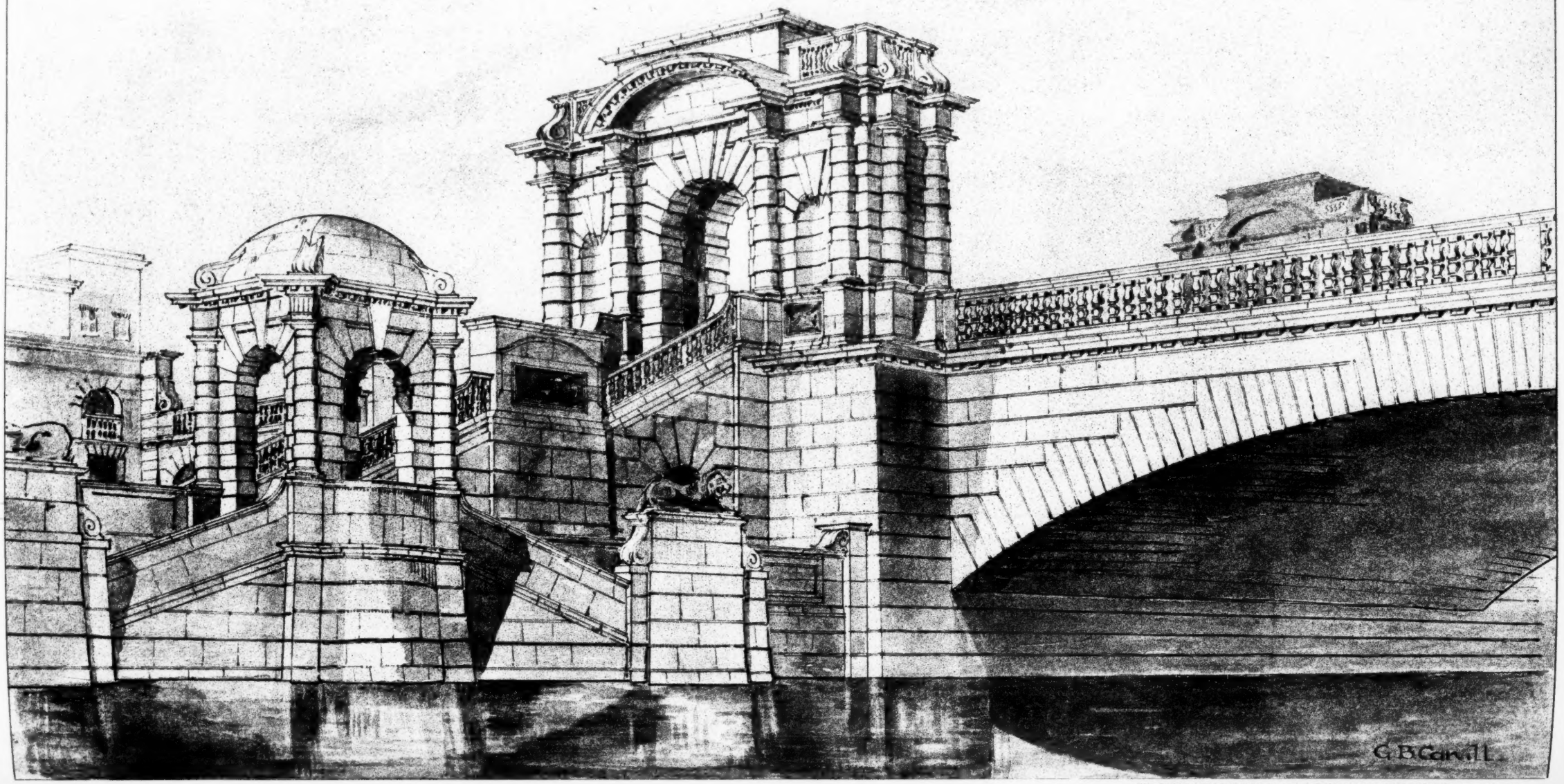
Design for a Stone Bridge.
The Approach.

By Mr G.B. Carvill.



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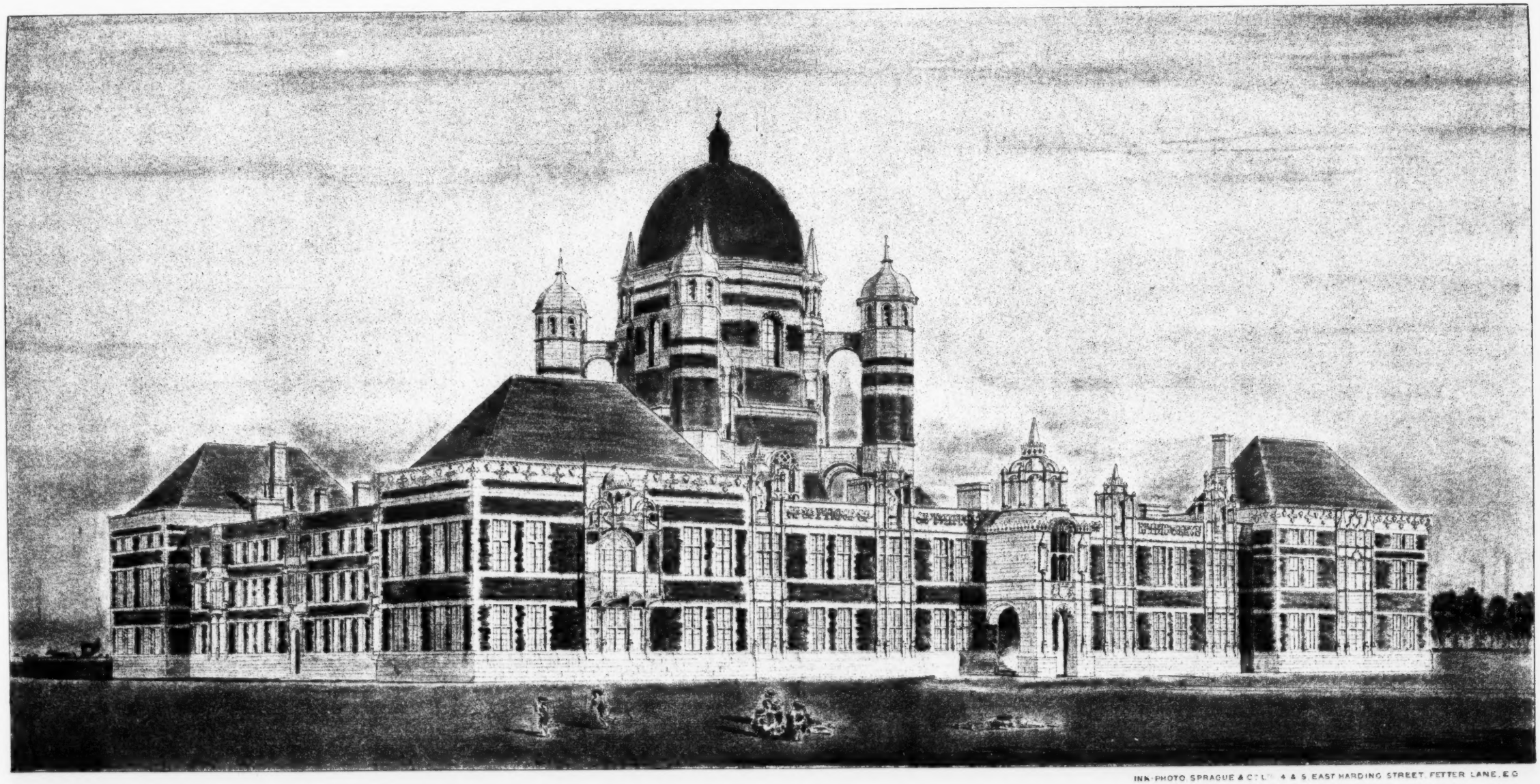

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COMPETITION DESIGN FOR MUNICIPAL BUILDINGS, BELFAST.—By Messrs. A. G. Humphry and W. B. Hopkins.

THE ABBEY OF S. ANDREW NEWNHAM

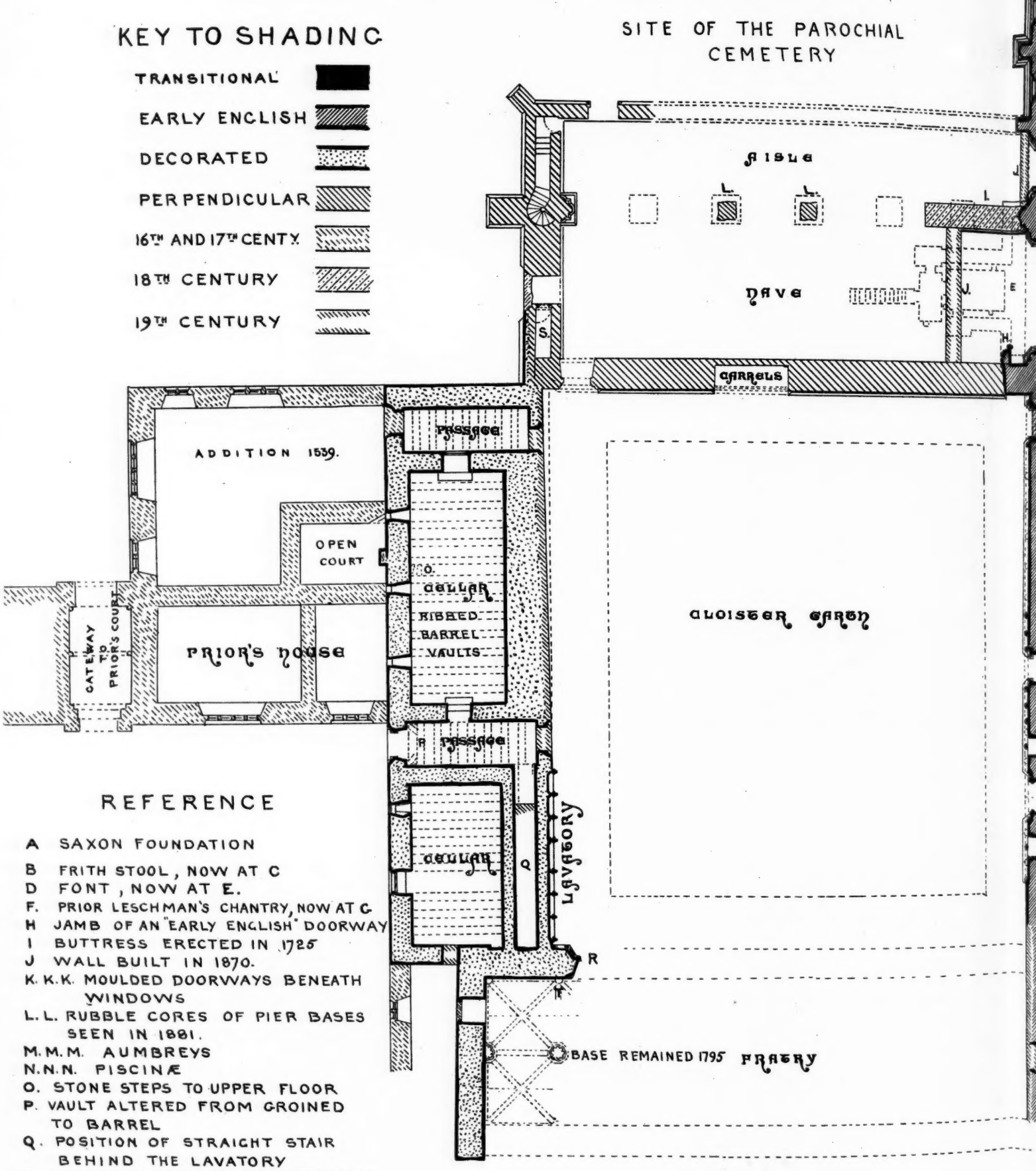
GROUND PLAN

SCALE

10 5 0 10 20 30 40 50 60 70 80 90 100 FEET

KEY TO SHADING

- TRANSITIONAL
- EARLY ENGLISH
- DECORATED
- PERPENDICULAR
- 16TH AND 17TH CENTY.
- 18TH CENTURY
- 19TH CENTURY



REFERENCE

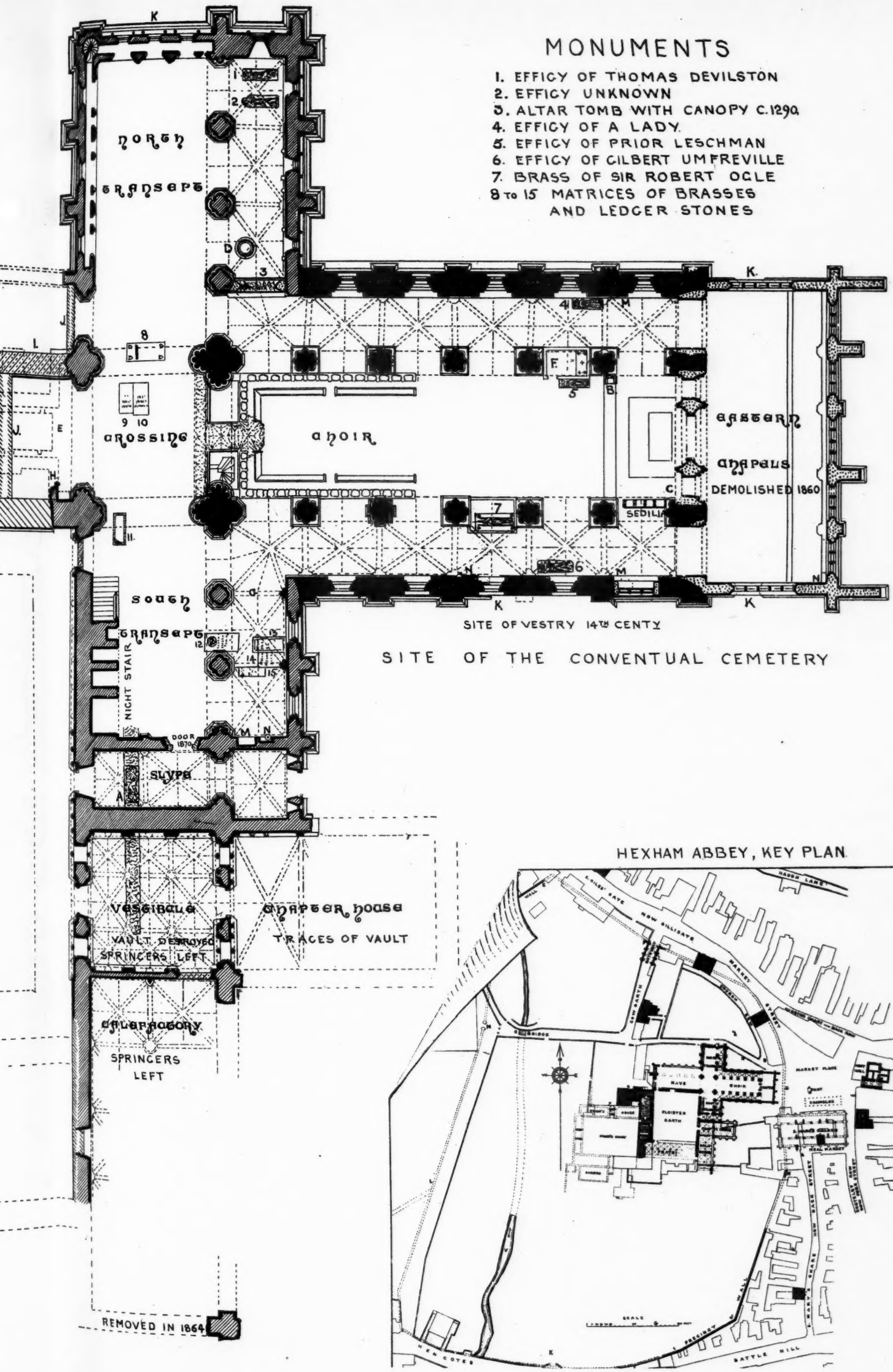
A SAXON FOUNDATION
B FRITH STOOL, NOW AT C
D FONT, NOW AT E.
F. PRIOR LESCHMAN'S CHANTRY, NOW AT C.
H JAMB OF AN "EARLY ENGLISH" DOORWAY
I BUTTRESS ERECTED IN 1725
J WALL BUILT IN 1870.
K.K.K. MOULDED DOORWAYS BENEATH WINDOWS
L.L. RUBBLE CORES OF PIER BASES SEEN IN 1881.
M.M.M. AUMBREYS
N.N.N. PISCINÆ
O. STONE STEPS TO UPPER FLOOR
P. VAULT ALTERED FROM GROINED TO BARREL
Q. POSITION OF STRAIGHT STAIR BEHIND THE LAVATORY
R. JAMB OF DOORWAY OF FRATRY
S. SMALL MURAL CHAMBER
T. VAULTING CORBEL REMAINING.

NOTE. IN A GENERAL WAY THE CHURCH IS SHOWN AS IT WAS IN 1858.

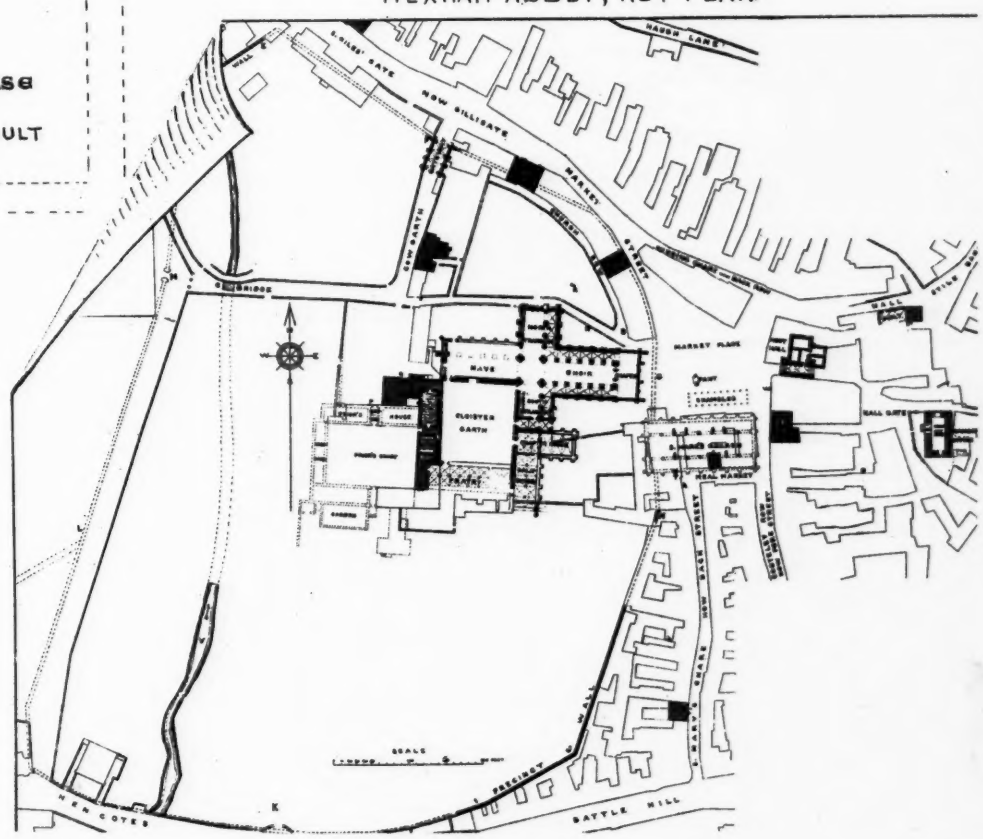
Charles C. Hodges.
Mens. et del. 1879-80.
Redrawn 1899.

MONUMENTS

1. EFFIGY OF THOMAS DEVILSTON
2. EFFIGY UNKNOWN
3. ALTAR TOMB WITH CANOPY C.1290
4. EFFIGY OF A LADY.
5. EFFIGY OF PRIOR LESCHMAN
6. EFFIGY OF GILBERT UMFREVILLE
7. BRASS OF SIR ROBERT OGLE
8 to 15 MATRICES OF BRASSES AND LEDGER STONES



HEXHAM ABBEY, KEY PLAN



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THE NEW BUILDING FOR THE SURVEYORS' INSTITU

VEYORS' INSTITUTION.—Messrs. A. Waterhouse & Son, Architects.